DOCUMENT RESUME

ED 352 981 IR 054 331

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TITLE The Use of Concept Mapping To Evaluate the Effects of Both Bibliographic and Discipline-Based Art Education Instruction on the Library Skills of Elementary Art Teachers.
PUB DATE Jul 91
NOTE 132p.; Master's Thesis, Kent State University.
PUB TYPE Dissertations/Theses - Masters Theses (042)

EDRS PRICE MF01/PC06 Plus Postage.
DESCRIPTORS Art Education; *Art Teachers; Elementary Education; Higher Education; *Library Instruction; Library Research; *Library Skills; Multivariate Analysis; Research Methodology; Resource Centers; *Statistical Analysis
IDENTIFIERS *Concept Maps

ABSTRACT

This study utilized the concept map, a visual representation of a learner's thought processes, as an assessment tool to evaluate the effects of both bibliographic instruction and Discipline-Based Art Education (DBAE) training on the library skills of elementary art teachers in a visual arts resource center. A 2x2 factorial posttest-only control group design was chosen to test for the effects and possible interactions of the two independent variables. Concept maps that the subjects (n=37) constructed as a test of their understanding of library use were scored, and a two-way analysis of variance was performed on these scores. The results showed that there were no significant differences at the $p<0.05$ level among the mean concept map scores of the four groups under study. The value of concept maps for revealing learner misconceptions and the need for a second form of assessment to establish the concurrent validity of the concept map as an assessment tool was discussed. The appendixes contain a consent form for participants; a concept map worksheet; categories of format in the Arts Resource Center; and 21 task lists. (Contains 48 references.) (Author/ALF)

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THE USE OF CONCEPT MAPPING TO EVALUATE THE EFFECTS OF BOTH BIBLIOGRAPHIC AND DISCIPLINE-BASED ART EDUCATION INSTRUCTION ON THE LIBRARY SKILLS OF ELEMENTARY ART TEACHERS

A Master's Research Paper submitted to the
Kent State University School of Library Science
in partial fulfillment of the requirements
for the degree Master of Library Science

by

Carla J. Schick

July, 1991

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Abstract

This study utilized the concept map as an assessment tool to evaluate the effects of both bibliographic instruction and Discipline-Based Art Education (DBAE) training on the library skills of elementary art teachers in a visual arts resource center. A 2 x 2 factorial posttest-only control group design was chosen to test for the effects and possible interaction of the two independent variables. Concept mapping can be described as a visual representation of a learner's thought process. Concept maps that the subjects (n = 37) constructed as a test of their understanding of library use were scored, and a two-way analysis of variance was performed on these scores. The results showed that there were no significant differences at the $p < 0.05$ level among the mean concept map scores of the four groups under study. The value of concept maps for revealing learner misconceptions and the need for a second form of assessment to establish the concurrent validity of the concept map as an assessment tool was discussed.

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ACKNOWLEDGEMENTS

I would like to gratefully acknowledge the assistance of the following persons whose help made this research project possible. The guidance that I received from my very patient project advisor Dr. Carl Franklin, was almost without limit. Rebecca Denning generously gave of her time to help me with statistical aspects of this project. And finally, I wish to acknowledge the computer graphics assistance that I received from my husband, David Schick.

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Chapter I

Introduction

This study utilizes concept mapping as an evaluation tool to measure the effects of bibliographic instruction and Discipline-Based Art Education (DBAE) training on the library skills of elementary art teachers in the Columbus, Ohio Public Schools. Recent changes in the organization of the Arts Resource Center (ARC), a visual arts collection created to provide visuals for the art teachers of the Columbus Public Schools, have made bibliographic instruction desirable so that the collection will be accessible to the teachers even when no staff person is present to assist them.

DBAE training refers to a special form of art education instruction that part of the teachers had already received in a past J. Paul Getty Summer Institute. Whereas more traditional art programs devote most of their attention to getting students involved in the making of visual images, the DBAE approach advocates that art instruction be based on content from the disciplines of art production, art history, art criticism, and aesthetics (Brandt, 1988; The Getty Center for Education in the Arts, 1988). Central to this approach to art education is a strong emphasis on the use of visual resources. Because it was considered possible that DBAE training could produce a teacher more motivated to use the ARC, it was decided that DBAE training

would also be included as a factor in this study.

Concept mapping, the method of evaluation chosen for this study, was selected for its emphasis on the visual representation of thought processes. It seemed especially appropriate to use such an approach with members of a profession whose primary focus is visual communication (Ragans, 1988).

Definitions of Terms

The following terms were defined in this study as follows:

ARC

This abbreviation stands for Arts Resource Center, a small visual arts collection that the Art Department of the Columbus Public Schools maintains to meet the visual and information needs of its art teachers.

Concept Map

Concept maps can be defined as "diagrams indicating concepts and their interrelations in both the vertical and horizontal dimensions (Schmid & Telaro, 1990). The resulting map represents the creator's conceptual organization of the topic. A concept map, according to Novak (1984, p. 609)," must have (a) a hierarchical structure, (b) relationships between concepts identified, and (c) more specific concepts subsumed under more inclusive concepts."

DBAE Instruction

DBAE refers to Discipline-Based Art Education, a philosophy

of art education that is gaining national recognition (Brandt, 1988). Discipline-based art programs are intended to provide systematic, sequential teaching in the four things people do with the arts: they make works of art, they appreciate art, they learn to understand art in relation to cultures, and they make judgments about the arts. These four major operations, also referred to as the four "disciplines" of DBAE, are art production, art criticism, art history, and aesthetics (Brandt, 1988). For the purposes of this study, DBAE instruction means the participation of a teacher in the J. Paul Getty 3-week DBAE training session.

Bibliographic Instruction

Bibliographic instruction, also called "user education" is defined as "the teaching of information-seeking processes and the organization and services of libraries" (Mensching, 1989). The bibliographic instruction in this study was designed to last an hour and consisted of the following. First, a brief overview of the major bibliographic tools of the ARC was given to the group. Next, each of the subjects was given a unique list of tasks to perform that involved them with these bibliographic tools. Lastly, the subjects were asked as a group to give suggestions on how they would locate information and visuals on the broad topic of "cubism."

Statement of the Hypotheses

Because this study focuses primarily on the relationship

between bibliographic instruction and library skills, the main question under study then becomes:

(Q1) Are there any differences in achievement between groups that receive bibliographic instruction and groups that do not?

The possible effect of DBAE training leads to the second question under study:

(Q2) Are there any differences in achievement between groups that receive DBAE instruction and groups that do not?

The third question addresses the possible interactive effects of the two forms of instruction:

(Q3) Are there any differences in achievement between the group that receives both bibliographic and DBAE instruction and those groups that do not?

These questions produce the following null hypotheses:

H(0)1 There is no statistically significant difference in achievement between groups that receive bibliographic instruction and those groups that do not.

H(0)2 There is no statistically significant difference in achievement between groups that receive DBAE instruction and those groups that do not.

H(0)3 There is no statistically significant difference in achievement between the group that receives both bibliographic and DBAE instruction and those groups that do

not.

H(0)4 There is no statistically significant difference in achievement between the group that received neither bibliographic nor DBAE instruction and those groups that receive either or both forms of instruction.

The following research hypotheses are then offered:

H(R)1 Groups that receive bibliographic instruction score significantly higher on a concept map test than those groups that do not receive the instruction.

H(R)2 Groups that receive DBAE instruction score significantly higher on a concept map test than those groups that do not receive the instruction.

H(R)3 The group that receives both bibliographic and DBAE instruction scores significantly higher on a concept map test than those groups that do not receive both forms of instruction.

H(R)4 The group that receives neither bibliographic nor DBAE instruction scores significantly lower on a concept map test than those who receive either or both forms of instruction.

Assumptions

For the purposes of this study it was assumed: (a) that the elementary art teachers participating in this study were within the normal range of ability and achievement; (b) that the teachers

were somewhat familiar with the ARC and were fully capable of performing the tasks associated with the bibliographic instruction; and (c) that participating teachers attempted to perform to the best of their ability on the concept mapping and the bibliographic instruction.

Limitations

The population of the study was limited to the 44 elementary art teachers of the Columbus Public Schools. The sample consisted of 37 of these teachers: five declined to take part and two were ineligible to participate because of their previous involvement with the ARC. That most of the teachers (approximately 81%) were female limits the generalizability of the study, as does the fact that all are employed by the Columbus Public Schools, and that all teach elementary art. A further limitation is the small number of subjects.

The instrument used to measure the possible effects of the two variables of the study was not a nationally normed instrument. Furthermore, a standardized form of bibliographic instruction was not used; instead, task sheets were specifically designed for this study. These points further limit the generalizability of the findings.

Chapter Summary

This study utilizes the concept map as an assessment tool to evaluate the possible effects of both DBAE and bibliographic

instruction on the library skills of elementary art teachers in a small visual arts resource center. Concept maps can be described as "diagrams indicating concepts and their interrelations in both the vertical and horizontal dimensions (Schmid & Telaro, 1990). DBAE instruction, a form of art training that is gaining national recognition, was considered as a factor because of its emphasis on the use of visual resources. The generalizability of this study's findings are limited by the fact that most of the subjects are female, and that all are elementary art teachers who teach for the Columbus Public Schools. Other limitations are the small sample size, the use of a form of assessment that is not nationally normed, and the use of a non-standard form of bibliographic instruction.

Chapter II

Review of the Related Literature

Concept Mapping

Background

A concept map is a "device for representing the conceptual structure of a discipline, or a segment of a discipline, in two dimensions" (Stewart, Kirk, & Rowell, 1979). Developed at Cornell University by Novak and the members of his research group (Novak, 1990), concept mapping derives from Ausubel's assimilation theory which stresses meaningful learning (Ausubel, Novak, & Hanesian, 1978). Meaningful learning results when a person consciously and explicitly ties new knowledge to relevant concepts or propositions they already possess (Okebukola, 1990). It is promoted by the understanding of the hierarchical relationships and linkages of concepts (Ausubel et al., 1978). According to Jegede, Alaiyemola, and Okebukola (1990, p. 957), the main goal of the concept mapping heuristic is to "identify the network of relationships between concepts rather than studying them as discrete isolated entities (rote learning)."

The major work with which to begin when speaking of concept mapping is Novak's and Gowin's Learning how to learn (1984), a book that promotes the concept map as a tool that can be used to help students of all intellectual levels create a visual representation of their thought processes and improve their

thinking skills. The two components of concept mapping are "concepts" and "linking words." Concepts are defined either as "events" (things that happen or can be made to happen) or as "objects" (things that exist and can be observed). A representative concept map from Learning how to learn can be found in Figure 1. In this example, the words "plants" and "animals" represent concepts whose relationship to the concept "living things" is shown by the use of the linking word "contain." Donovan (1983, p. 4) summarizes the process of creating a concept map in three steps:

> The first step is to identify the important concepts in the given subject area. These concepts are then ranked from the most general to the most specific. The third step is to arrange the concepts in a hierarchical order, using lines and words that explain the relationship to link the concepts.

It would be almost impossible to read the literature on concept mapping for long without coming across the following quote from the epilogue of Educational Psychology: "If I had to reduce all of educational psychology to just one principal it is this: The most important single factor influencing learning is what the learner knows. Ascertain this and teach him accordingly" (Ausubel et al., 1978). It was Novak's search for better ways to represent "what the learner already knows" that lead to the development of the tool of concept mapping in 1972. At first it was used for research purposes to represent student's knowledge structures before and after instruction, but soon Novak and his students

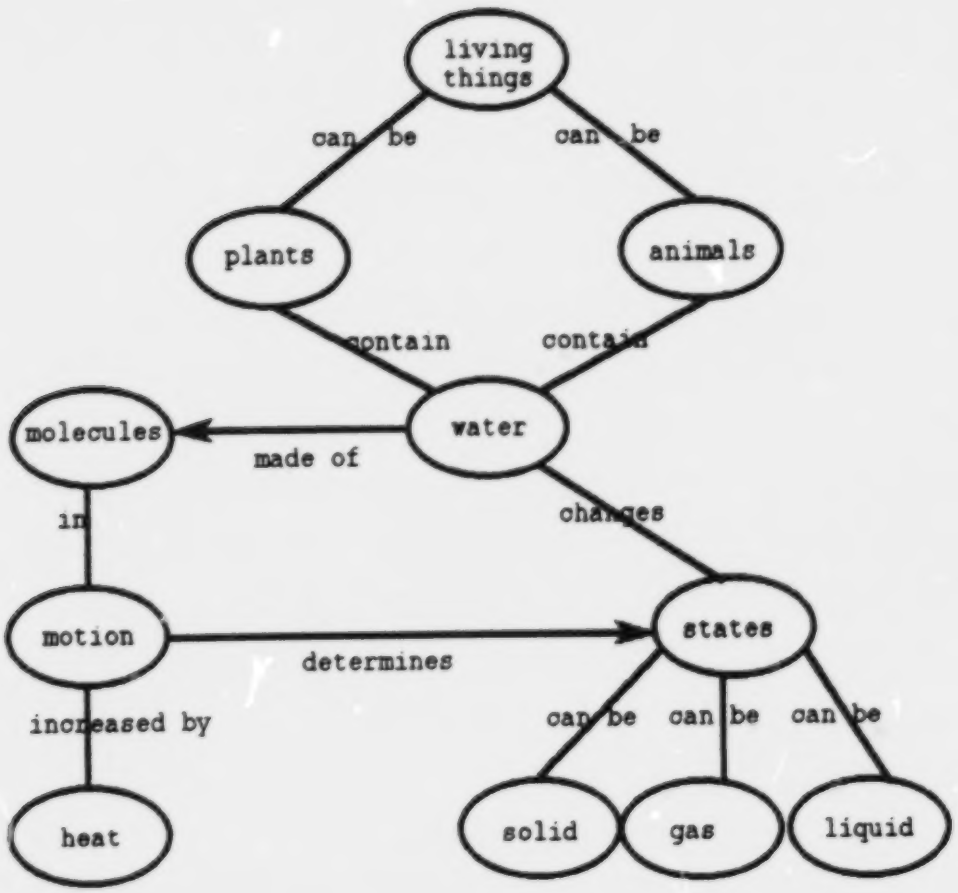


Figure 1. A representative concept map: "Living Things." (From Novak and Gowin, 1984, p. 18)

realized that concept maps could be a useful tool to help students from learning by rote to learning meaningfully (Novak, 1990).

The Concept Map as Instructional Tool

Most of the literature written about concept mapping has focused on its use as a tool of instruction - a tool that has been especially used in the discipline of science education (Malone & Dekkers, 1984; Novak, 1979 Novak, 1980; Stewart et al., 1979). Concept mapping has been found to be a particularly useful instructional strategy for high school students learning biology concepts. Because biology consists of "a myriad of unfamiliar concepts involving complex relations," concept mapping appears to be ideally suited to address biology content (Schmid & Telaro, 1990, p. 78). Havel and Treagust (1989) advocate the use of concept maps as visual aids to help functionally illiterate high school biology students develop associations between diagrams and concepts, suggesting that such visual imagery provides a framework for organizing and remembering information. Lovoie and Backus (1990) state that a basic characteristic of concept maps is the specification of relationships between and among diverse pieces of information. They see concept maps as valuable for identifying misconceptions in the student's conceptual framework. Pankratius' (1990) study focuses on the relationship between student concept mapping and achievement, finding that groups that received instruction on concept mapping scored 18.4% higher on an

achievement test than groups that received standard instruction. Jegede et al.(1990, p. 957) found concept mapping to significantly lower ($p < .05$) the anxiety levels of males and females (by 38% and 33%, respectively) toward the learning of biological concepts, "because of the ability of the learner to control, determine, and make decisions about 'the how' and pace of what is learned confers on the learner the advantage of shaking free from the pressures which would otherwise impede meaningful learning." Concept mapping has been used by teachers of all grade levels, from primary (Stice and Alvarez, 1988) to high school (Wandersee, 1990).

The Concept Map as Assessment Tool

The value of concept mapping as a heuristic has now been established, but its worth as an evaluation tool has yet to be addressed. The studies that have been discussed thus far have primarily used some form of standardized test to measure learning achievement after concept mapping was used as the instructional tool. What literature is there to support the use of the concept map as an assessment tool?

First of all, there are the writings of Novak and Gowin to support this. Their book, Learning how to learn (1984) includes an entire chapter in which they discuss the merits of the concept map as an alternate tool of assessment. A key to be used for the scoring of concept maps is included as well. It is a form of

assessment that is superior to a typical multiple-choice standardized test because it yields more than a score; "concept mapping allows one to observe the learning itself" (Novak and Ridley, 1988, p. 11). It also allows the learner to demonstrate all that he or she knows about the topic at hand, not merely what he or she is specifically asked.

Malone and Dekkers (1984) also present a scheme, rather more elaborate than that of Novak and Gowin, devised for scoring concept maps based on Ausubelian learning principles. Their scheme's scoring system can differentiate between different levels of concept development. Other writers who address the issue of the concept map as an evaluation tool include Schmid and Telaro (1990), who suggest that concept maps can and should be extended into the evaluative domain, although they offer no suggestions to just how the maps should be evaluated.

The Validity of Concept Mapping

Novak and Ridley (1984) argue that concept maps can be said to possess construct validity, that is, a direct correspondence between the elicited performance and theories of learning. Wallace and Mintzes (1990) examine the concurrent validity of concept mapping as a vehicle for documenting and exploring conceptual changes in biology, looking specifically at the extent to which concept maps reveal changes in cognitive structure that result from brief episodes of instructional intervention. They

found concept mapping to be the only evaluation approach that attends to both what students know and how they organize their knowledge.

Related Models in Library and Information Science

As a device for organizing and communicating knowledge, it would seem logical that concept mapping be widely utilized, if not specifically in the area of visual librarianship, at least in the general field of library and information science. This has not been the case, however. Although some library science researchers have created models that analyze the search process, these researchers tend to deal more with theories and models that are related to concept mapping, than with concept mapping itself. Stam (1985) used interviews to find what mental and physical steps that art reference librarians take to answer patrons' questions, but she did not diagram her results. Other writers (Benson & Maloney, 1975; Jahada, Braunagel, & Nath, 1977; Rettig, 1978) have developed diagrams of the search process that resemble communication models. Ridgeway (1983) asked users to create physical maps of library facilities to show how they visually perceived the library. These "mental maps," however, were only capable of demonstrating that a user knew where an item was located, and not that he or she understood how the item could be used. A chart created by Geahigan and Geahigan (1982) for art teachers illustrates a series of search strategies that can be

used to locate visuals and information. This chart is linear and does not show the interrelationships that exist among the source, as concept mapping would.

Concept Map Use in Library and Information Science

To date only two articles could be found that deal with the benefits of concept mapping in the area of library science. Rada, Mili, Letourneau, & Johnston (1988) used concept mapping to both create and evaluate entry terms in the Medical Subject Headings (MeSH), a thesaurus used by the National Library of Medicine's bibliographic retrieval system (Medline). Sherratt & Schlabach (1990) found that concept mapping could be used by prospective librarians to illustrate their knowledge about reference service. Although assessment was not the primary goal of their exercise, it was mentioned as a potential benefit of concept mapping for library science.

Concept Maps and the Visual Arts

No evidence could be found that concept mapping has been explored as an assessment tool for bibliographic instruction in a visual arts collection. A search of the art education literature likewise found no examples of concept mapping ever having been tried for any purpose, although evidence was found of that profession's search for valid alternative approaches to both teaching and assessment. Maitland-Gholson (1990) argues for a stronger emphasis on contextually sensitive, nonstandardized

approaches for evaluation in the field of art education. Wilson (1990, p. 61) criticizes the use of standardized tests for the evaluation of art teacher performance, because such tests "may not test knowledge and skills essential to teaching."

Bibliographic Instruction

Overview

Eadie (1990, p. 43), defines bibliographic instruction as "instructional programs aimed at groups of library users, delivered on schedule, and in anticipation of questions that have yet been asked, rather than on demand and at point-of-service." Bibliographic instruction first became widely offered by libraries in the 1960s and 1970s in a time when many new and special services were being created (Eadie, 1990). Over the years it has taken many forms, such, as library tours, bibliographic workshops, audiovisual or videotaped instruction, and publication programs.

The Lecture Approach

Concerning the different instructional methods that can be employed, there seems to be a consensus of opinion that the lecture method, especially when used alone, is the weakest. Rosenblum (1983) finds lectures to be inefficient, since it is difficult for students to retain information on sources that they have only heard about. He maintains that "library use is a skill and the art for which classroom experience is no substitute" (Rosenblum, 1983, p. 9). Allen (1990) believes the lecture method

to be ineffective because an individual's attention span is only about 20 minutes and that students can learn better when they are active participants in the learning process. Sheridan (1990) criticizes in general any method of bibliographic instruction that is passive, and she advocates in its place bibliographic instruction methods that more actively involve the user.

The Media Approach

Other methods of instruction mentioned in the literature include the use of special media, such as slides (Fry & Kaplowitz, 1988), interactive video (Rodkewich & Kautz, 1989), and computer-assisted instruction (Madland & Smith, 1988). It was reported that these media have the advantage of being effective in their abilities to hold the attention of the user, but they are complicated and expensive to produce and maintain. In fact, Rodkewich and Kautz (1989) were not able to evaluate the effectiveness of their interactive videos before the videotapes wore out.

The Experience-Based Approach

The method of bibliographic instruction that was found in the literature most similar to that chosen by this study was the experience-based approach used by McCutcheon (1990). Since 1982, he has been experimenting with "scavenger hunts" as an approach to giving his students a "hands-on" research experience. McCutcheon (1990) reported that such a method allowed his learners to apply

what they had learned about bibliographic tools in a meaningful way. It was hoped that the task lists developed for this study would similarly grant the subjects the opportunity to learn through experience. An added benefit of such an instructional approach method is that it is inexpensive to produce; the only cost is in the time spent in planning the "hunts" or "tasks."

Chapter Summary

It is apparent that this study represents an attempt to break ground in the field of library and information science, in that no other research has specifically tested the potential value of the concept map as a tool to quantitatively assess the effects of bibliographic instruction. This study also represents a first attempt to use the technique of concept mapping in art education, in that DBAE training is also a factor under consideration.

Various approaches have been taken to bibliographic instruction over the years. Those based on the lecture appear to be ineffective because the user is not given the opportunity to work with the tools, and information that is not applied is soon forgotten. Media approaches seem to hold the interest of the user, but they are expensive and complicated to produce. Bibliographic instruction approaches such as "scavenger hunts" grant the user the opportunity to learn through experience. Such methods are also inexpensive. A similar approach was used by the this study, in that "task lists" were the main instructional tool.

Chapter III

Methodology

Research Design

A 2 x 2 factorial posttest-only control group design was chosen for this study. According to Campbell and Stanley (1963), this is an experimental design that controls for all of the internal sources of invalidity: history, maturation, testing, instrumentation, regression, selection, experiment mortality, and selection-maturation interaction. A factor jeopardizing external validity that is specifically controlled for by this design is the reactive or interaction effect of testing, "in which a pretest might increase or decrease the respondent's sensitivity or responsiveness to the experimental variable" (Campbell & Stanley, 1963, p. 6).

The strength of factorial designs is that they can deal with more than one independent variable, in this case, bibliographic and DBAE instruction. According to Powell (1985), factorial designs allow the researcher not only to measure the specific effects of the independent variables on the dependent variable, but they should also give some indication of interaction. Because of this, factorial designs tend to be high in external validity (Powell, 1985).

The factoring in of the possible effects of DBAE instruction on the outcome was accomplished by splitting a list of the names

of teachers who had received DBAE training (approximately one-fourth of the total number of teachers), and then randomly assigning half to the control group and half to the experimental group. The rest of the teachers were then assigned to one group or the other. It was originally intended that the DBAE-trained/experimental and the non-DBAE-trained/control groups would be of equal size. However, a few of the eligible teachers declined to take part in the study, resulting in groups of unequal number.

Threats to Internal and External Validity

Internal Validity Threats

Because no pretest is given in the posttest-only control group design it is said to control for the effects of testing, that is, the effects of taking a test on the scores of a second testing (Campbell & Stanley, 1963). In the course of this study's concept mapping instruction, however, the teachers were asked to construct a demonstration concept map on a topic different from that which would be later tested. A possibility existed, therefore, that performance on the posttest concept map may have been affected by the subjects' experience with the demonstration concept map.

The uniqueness of the ARC (no evidence of the existence of another school visual arts collection could be found) was an additional threat to the validity of the study. Because many of

the its reference tools are designed specifically for the ARC, it would be difficult to locate a standardized test against which the concurrent validity of the concept map as an assessment tool could be established.

External Validity Threats

Although the study took place over a relatively short period of time (8 days total), there was some loss of participants due to illness. The fact that three subjects were absent due to illness for the posttest threatens the external validity of the study. This loss added to the already existing problem that the groups, particularly the DBAE-trained ones, were too small. That one of the groups contained only four subjects and another six certainly was a further threat to external validity.

An additional disrupting factor to the study was an ice storm that occurred on the morning of the experimental treatment, resulting in a shortened bibliographic instruction time and agitated subjects. It is certainly possible that the bibliographic instruction would have been more effective under less chaotic conditions.

Site and Subject Selection

Site Selection

The ARC was chosen as the site for this study because its resources had been recently reorganized and bibliographic instruction seemed desirable. It was also a convenient, since the

author of this study is also the person in charge of the ARC. It seemed logical that the study take place at a library with which the author was so familiar, and where she had so much control.

Subject Selection

Although any teacher employed by the Columbus Public Schools may use the ARC if they so wish, the approximately 44 elementary art teachers were chosen as the population. It was limited to the art teachers because the ARC was originally begun by the Art Department, and the primary focus of the collection has been on visual resources to aid art teachers. Whereas "classroom" elementary teachers may request "a picture of people involved in their occupation," or "holiday pictures," art teachers tend to ask for visuals in terms that reflect their art training. Art teachers were singled out as the population because the collection of the ARC is indexed with the art specialist in mind.

The population was further limited to the elementary art teachers because they are farily homogeneous as a group in terms of their experience with the ARC. Only the elementary art teachers are required to attend a weekly meeting at the high school where the ARC is located, and they often visit the ARC after the meeting to check out resources. Because of this, the elementary art teachers have had as a group much more opportunity to become familiar with the ARC than have the middle and high school art teachers.

Human subjects review

Before the study was begun, permission was obtained from the Art Supervisor of the Columbus Public Schools. Additionally, examples of both a concept map and a task list were submitted to the Kent State University Human Subjects Review Board as part of the "Application for Approval to use Human Subjects." Appendix A is a copy of the application that was submitted. Included with this application is the form used to obtain the informed consent of the 37 elementary art teachers who ultimately agreed to serve as the subjects for this study. Data collection and analyses were conducted in such a manner as to insure complete confidentiality, and no data from individual teacher performance were made available to anyone. Approval to proceed with the study was given, Feb. 6, 1991, by Dr. Judith Vilmain.

Characteristics of the Subjects

At the top of the worksheets that the subjects used for the construction of their concept maps were four questions that elicited information about the subjects. Appendix B is a copy of the worksheet. A tally of the answers to these questions revealed that

1. Thirty (approx. 81%) were female.
2. Twenty-four (approx. 65%) worked at an school at a distance of fifteen minutes or more in driving time away from the ARC.

3. Eight (approx. 22%) had earned their Masters.

4. Twenty-four (approx. 65%) had five or less years of teaching experience.

This information was solicited to provide additional factors to consider for their possible correlation with posttest performance.

Conditions of Testing and Treatment

Concept Mapping Training Conditions

The concept map training took place early on a Monday morning (about 7:30 a.m.) during the time that is usually allotted for the elementary art teachers' required weekly meeting. The instruction, which lasted approximately one hour, was administered to the whole group at once in a large room in the Ft. Hayes High School for the Visual Arts. A chalkboard was used by the instructor for the demonstration of the concept mapping technique.

Bibliographic Instruction Conditions

The experimental treatment took place in the ARC on the Friday following the concept map training session. Once again the instruction took place at an early hour (around 8:00 a.m.). The ARC is housed in a large Civil War era building that has been converted into an art high school, the Ft. Hayes High School for the Visual Arts. The ARC is located on a floor without internal walls, and it shares space with the painting and printing classes. Shelves and cabinets are arranged in such a way to delineate the area allotted to the ARC. No high school classes were being held

on the day of the experimental treatment, so disturbance from the students was avoided. The previously mentioned ice storm, however, caused unexpected problems since it caused the teachers to be somewhat agitated and instructional time to be lost.

Conditions for the posttest, which took place on the Monday morning following the bibliographic instruction, were essentially the same as those for the concept map instruction session. Again instruction took place around 7:30 a.m. in the same large room where the concept mapping training session had been held.

Instrument

Concept mapping is the tool of evaluation used by this study. Teachers were asked to construct a concept map that would be graded to assess their skill in locating resources in the ARC. It should be pointed out that concept mapping was used solely as the instrument of evaluation; it was not used as part of the treatment. In this way the study differs from the others dealing with concept mapping as an assessment tool, in that other studies employed concept mapping as both the teaching and the assessment tool.

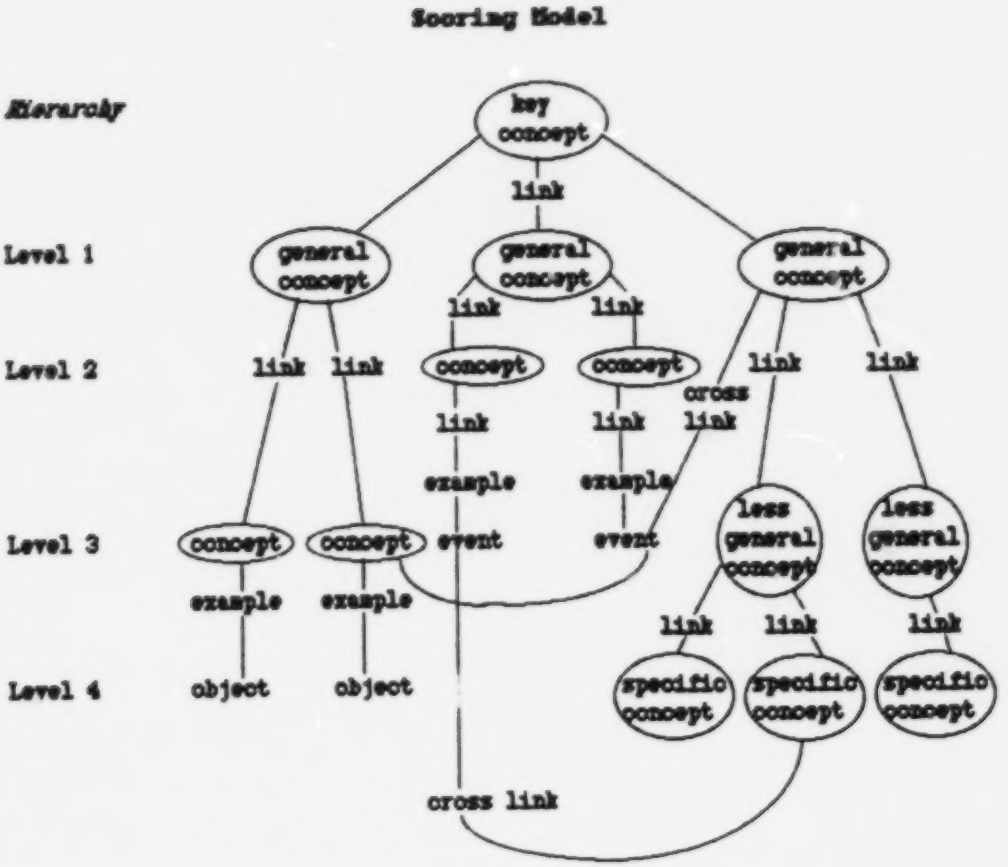
The following brief explanation of the method that was used to score the concept maps is based upon criteria set laid out by Novak and Gowin (1984):

1. Propositions - if the relationship between two concepts indicated by a linking word is valid, score 1 point.

2. Hierarchy - if the map shows hierarchy with each subordinate more specific than the concept above it, score 5 points for each valid level.
3. Cross links - if the map shows a meaningful connection between one segment of the hierarchy and another segment, score 10 points.
4. Examples - Specific events or objects that are valid examples of those designated by the concept label can be scored as 1 point each.

The score on a concept map is presented as a total value that is measured on the interval scale. For an illustration from Learning how to learn (Novak & Gowin, 1984) of how this scoring system works, see Figure 2.

Figure 3 is a representative concept map that was designed to illustrate how the instructor would map the process she would use in locating resources in the ARC. It also serves as an example of a scored map. This sample concept map is in no way intended to be an absolute template of the "correct" way to map this process. As Schmid and Telaro (1990, p.79) point out, "a given topic may be accurately represented by a concept map in a variety of ways." This map was not used as part of the bibliographic training for fear that doing so would interfere with independent creative thinking. Schmidt and Telaro (1990, p. 84) warn against the use of teacher constructed maps before learners have had the



Scoring for this model:

Relationships (if valid)	=14
Hierarchy (if valid) 4 x 5	=20
Cross links (if valid and significant) 10 x 2	=20
Examples (if valid) 4 x 1	= 4
	58 points total

Figure 2: A description of the scoring method of a concept map.

(From Novak and Gowin, 1984, p. 37)

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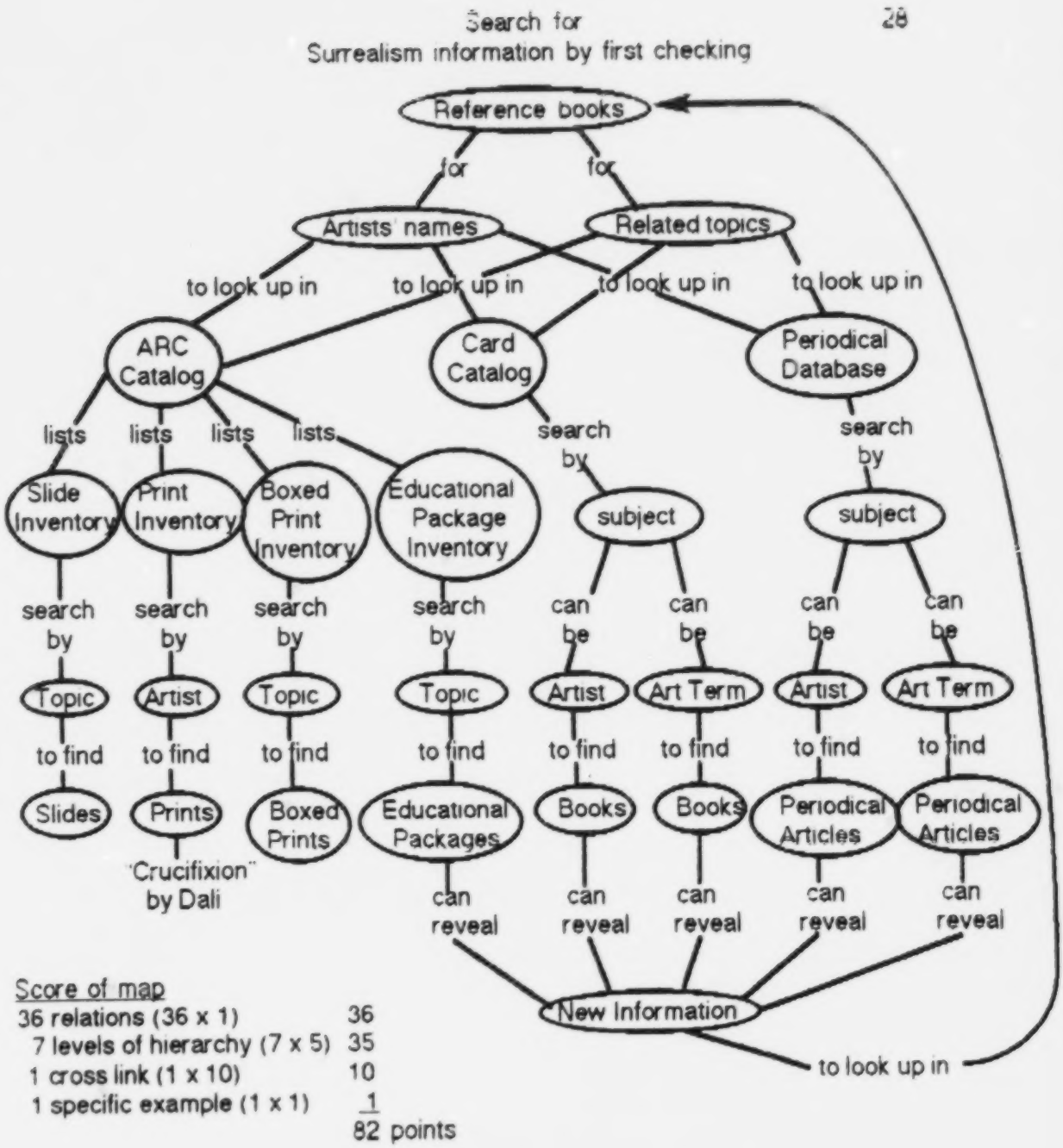

Score of map

36 relations (36 x 1)	36
7 levels of hierarchy (7 x 5)	35
1 cross link (1 x 10)	10
1 specific example (1 x 1)	1
	82 points

Figure 3 A representative concept map of the use of the reference tools in the ARC Topic searched "Surrealism

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opportunity to construct their own maps, saying that such a practice "will likely produce the same kind of rote memorization already so common in the schools."

Procedure

The entire study was carried out over a period of eight days (Feb. 11-18, 1991) and involved three sessions:

1. During a Monday morning teacher's meeting, all subjects were introduced to concept mapping as a group.
2. The following Friday, during a teacher conference day, the experimental group received bibliographic instruction as a group.
3. The following Monday, the subjects were was asked to construct a concept map depicting the steps they would take to find visuals and information in the ARC.

Concept Map Training

During the first session of the study, the instructor carefully followed the procedures laid out by Novak and Gowin (1984, p. 32-35) for introducing concept mapping in grades seven through college. The art teachers were introduced to objects, events, and linking words, the primary components of concept mapping. They were taught how to arrange the object and event words (the concepts) in hierarchical order, from the general to specific, and how to link these concepts together in a meaningful fashion. The instructor constructed a simple concept map, then

one was created as a group, and finally each teacher was asked to create a map on his or her own. The topic given for the teachers to map was "art," chosen because it was their area of expertise. It was hoped that the use of such a familiar topic would make concept mapping easier for their first independent attempt. Figure 4 is one of the better-executed demonstration maps constructed during this session. Note the effective use of hierarchical levels to proceed from general concepts to the specific.

Bibliographic Instruction

The bibliographic instruction treatment consisted of a one-hour training session intended to acquaint the teachers in the experimental group with the bibliographic tools of the ARC. Appendix C is a list of the major categories of the formats housed in the ARC, how they have been organized, and the tools that have been created to index each format. A general introduction to the bibliographic tools was followed by the distribution of lists of ten tasks for each teacher to carry out. These lists can be found in Appendix D. Each task was designed to involve the art teacher with a bibliographic tool of the ARC. Except for the final task, the procedure for carrying out each task was given, and the teachers had to follow the procedures to answer a given question or find a required item. To encourage individual initiative, no two task lists were the same, although the lists were similar in complexity. Approximately the same number of sources were

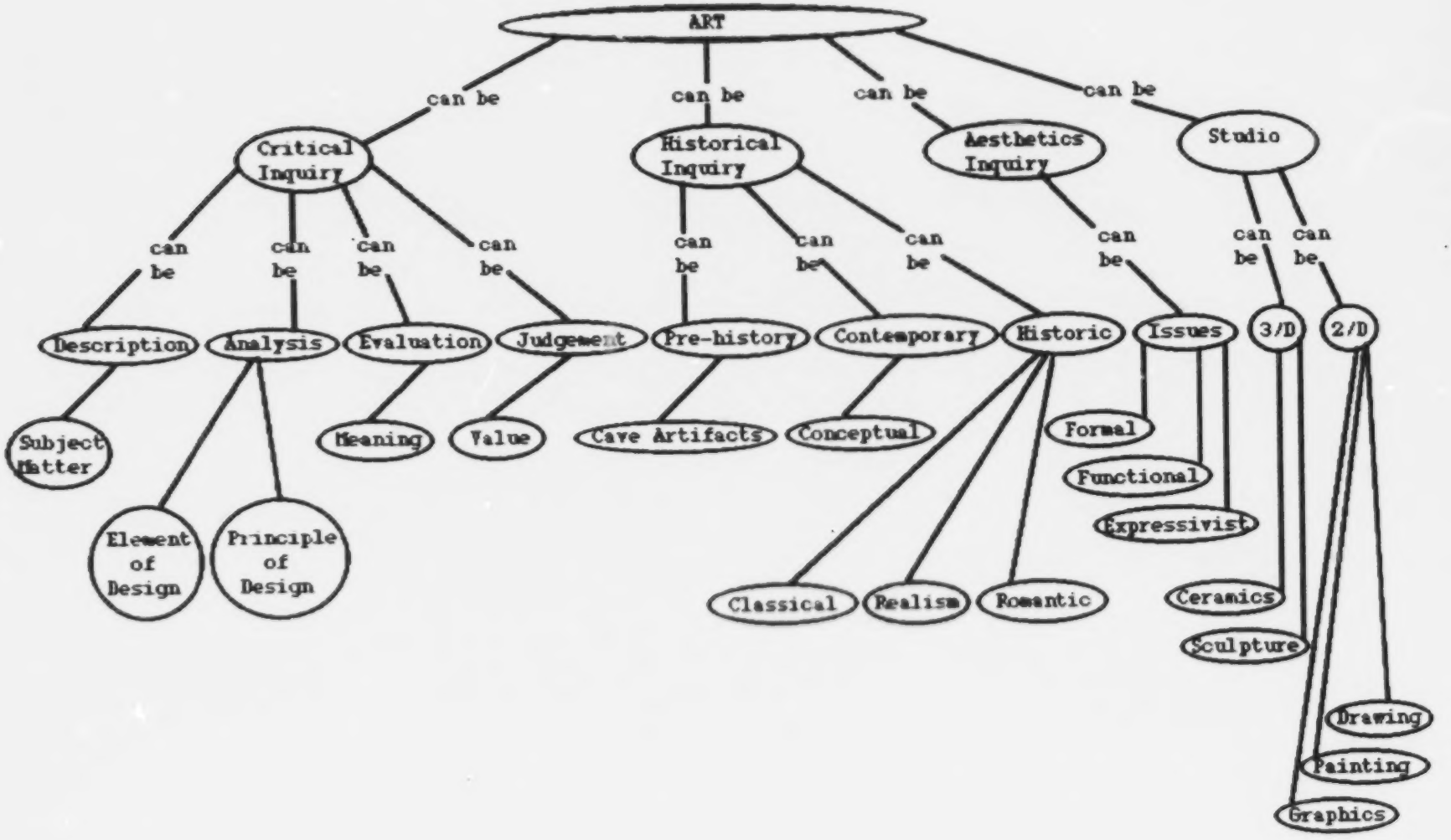

Figure 4 A concept map for the topic, "art," prepared by an elementary art teacher as part of the concept map training session

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required to be consulted in the course of completing the task list. Furthermore, the tasks did not require the use of bibliographic tools in the same order so that the process would be able to flow as smoothly as possible. A problem with congestion was not expected in any case, since each teacher was also given his or her own copy of the ARC catalog which contains many of the bibliographic tools.

The final task, which was to be performed by the entire group jointly, was designed to encourage the art teacher to use a variety of the tools to find visuals and information on the broad topic of "cubism." Procedures were not given for this task; it was hoped that the teachers would begin to think conceptually about how to locate items in the ARC. At this point the instructor solicited suggestions from the teachers about what procedures could be used to find as many resources as possible on the topic. The suggestions that were valid were carried out and the resources were located.

DBAE Instruction

The second form of treatment, the DBAE instruction, had taken place prior to the study. DBAE instruction meant that a teacher had participated in a J. Paul Getty three-week summer institute. Although DBAE training is sponsored in several states by the J. Paul Getty Trust, in Columbus the training is presented by The Ohio Partnership for the Visual Arts, a consortium formed in 1988

by the Columbus Public Schools, the Ohio State University, and the Columbus Museum of Art. A brief description of a past institute is as follows (The Ohio Partnership, 1990):

> The three-week program was designed to present the recognized four DBAE disciplines to school teachers using local and national experts. The ultimate intent is to demonstrate the translation of DBAE theory into classroom practice. The expert presentations focused on works of art and the world of art. Several of the presentations were made by discipline experts; others were followed up by visits to artists' studios, art galleries, or museums.

Posttest

Before the teachers were asked to draw their concept maps, a quick review of the technique was given. They were then told the topic of their concept map: they were to map the steps that they would take in systematically finding resources in the ARC. The topic was to be simplified as "finding resources." A list of some key concepts pertaining to the ARC were then written on the chalkboard. These included: books, art dictionaries, computer, prints, educational packages, slides, topic, catalog, periodicals, card catalog, boxed prints, and artist. The teachers were told that these words were only a suggested list, and they were invited to incorporate any additional relevant concepts they could think of into their own maps. The teachers were then given about twenty

minutes to execute their concept maps, although most completed them within about ten minutes. Figure 5 is one of the posttest concept maps that illustrates the ARC search process especially well, in that it correctly illustrated the use of the bibliographic tools of the ARC. Especially impressive is the subject's use of cross-links to indicate that information found by one source can be utilized to generate searches in others. Figure 6 is an example of a posttest concept map that indicates the misconceptions a teacher holds about the way the ARC's materials are indexed. It is not true, for example, that books are indexed on the computer, or that art prints are indexed in the card catalog.

Data Analyses

Upon the completion of data collection, various data analysis applying descriptive and inferential statistical techniques were conducted. Brief descriptions of the analyses will be included in this section. The SAS Statistical Package, Version 6.06 (SAS Institute, Inc., 1990) was used with the IBM mainframe system to analyze the data. Because the groups were unequal in size the general linear model was employed. The test of least square means was used to adjust for unequal cell sizes.

Descriptive Statistical Techniques

The principal descriptive statistics included measures of central tendency (mean, median, mode) on all variables. Measures

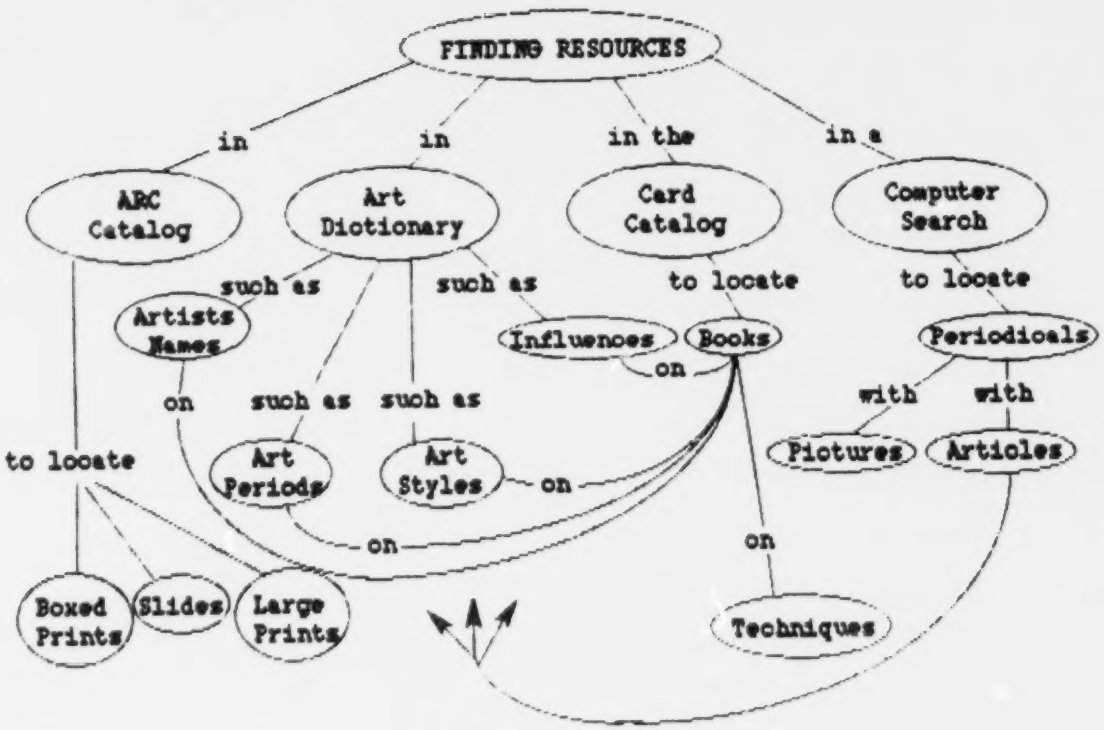

Figure 5. A concept map, prepared by an elementary art teacher as part of the posttest, that effectively illustrates the process of finding resources in the ARC.

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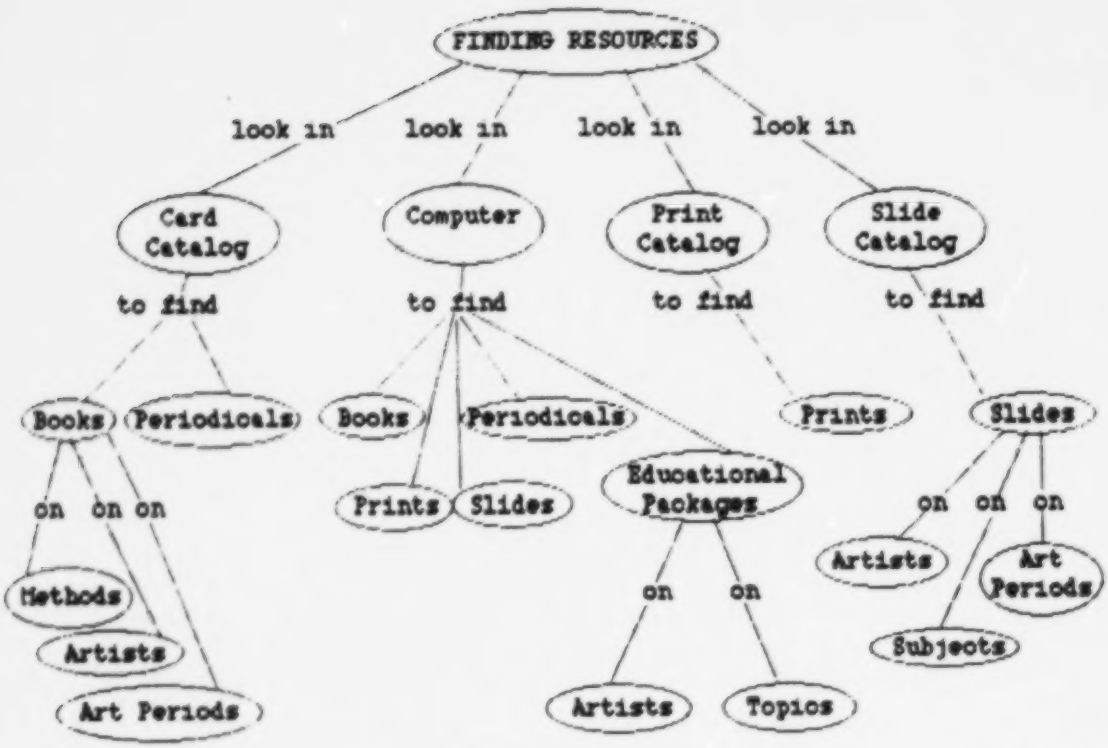

Figure 6: A concept map, prepared by an elementary art teacher as part of a posttest, that indicates misunderstandings about the process of finding resources in the ARC.

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of variability (standard deviation, range) were examined and scatterplots of the variables were created.

Inferential Statistical Techniques

A two-way analysis of variance was use to test the research hypotheses. An alpha level of .05 was the level of significance adopted for this study. Analysis of variance was used to test any unhypothesized three-way interactions that may have occurred. Gender, proximity of job to the ARC, and possession of a Masters degree were all analyzed for their possible correlations with the scores of the four groups under study. To determine whether demonstration concept map scores could be significantly correlated with posttest concept map scores, a two-way analysis of covariance was employed. And finally, a multiple linear regression analysis was performed to determine if the score on each of the concept map components (relations, hierarchy, cross-links, and examples) contributed significantly to the total concept map score.

Chapter Summary

This chapter discussed the design of the study, a 2 x 2 factorial posttest-only control group design. The design's strengths were listed, along with possible threats to the study's internal and external validity. Information concerning the site and subject selection was given, as well as the conditions of testing and treatment. A brief explanation of the process used to score a concept map, this study's instrument, was included to

explain how it functions as an assessment tool. The three sessions of the study were described in the procedures section. And finally, the descriptive and inferential statistical techniques used to analyze the data were listed.

Chapter 4

Findings

Report of the Descriptive Data Analyses

Group Posttest Scores

The summary data on the group posttest scores can be found in Table 1. Mean scores for the four groups ranged from 8.5 to 29.83, with the highest mean scores belonging to the group that had experienced both forms of instruction. The lowest mean score was received by the group that had received the DBAE training-only. The greatest range within a group's posttest scores was displayed by the group that had received the bibliographic training (range = 101). This was also the group that contained the greatest number of subjects (n = 15). The DBAE/Bibliographic instruction group demonstrated the greatest variability (SD = 22.26).

Group Demonstration Scores

A summary of the descriptive data on the demonstration scores can be found in Table 2. "Demonstration scores" refers to the scores of those demonstration concept maps that the subjects constructed as part of the concept map training. They are not to be considered pretest scores. Once again, the mean score was highest for the group that had received DBAE instruction and would later receive the bibliographic instruction. Despite the fact that randomization had been employed in the assignment of the

Table 1

Means of the Posttest Concept Map Scores by Group Training

Group Training	n	M	median	mode	range	SD
None	12	19.16	19	19	50	15.13
DBAE	4	8.50	7	0	20	10.12
Bibliog.	15	25.60	23	24	101	22.30
DBAE/Bibliog.	6	29.83	25	0	81	27.42

Table 2

Means of the Demonstration Concept Map Scores by Group Training

Group Training	n	M	median	mode	range	SD
None	12	36.17	34.50	14	48	16.72
DBAE	4	42.25	44.00	23	51	21.23
Bibliog.	15	38.67	37.00	46	74	16.21
DBAE/Bibliog.	6	55.33	48.00	34	57	22 26

subjects to the groups, some pretreatment differences seem to have existed among the four groups. The mean scores vary widely, from a low of 34.5 to a high of 48 points, among the four groups before the experimental treatment was administered. The two groups that had received the DBAE training scored higher than those groups that had not. As with the posttest scores, the greatest range within a group score was exhibited by the DBAE-only group (range = 74), and the DBAE/bibliographic instruction group displayed the greatest variability (SD = 27.42).

Comparison of Posttest and Demonstration Scores

A comparison of the means of the demonstration and posttest scores can be found in Table 3. It is interesting to note that all four groups scored higher on the demonstration than on the posttest concept maps. The average group decrease was 59%. The following is the rank order of mean scores, from highest to lowest by group for the demonstration concept maps: DBAE/bibliographic instruction, DBAE instruction-only, bibliographic instruction-only, and no instruction. The rank order, from highest to lowest for the posttest concept map scores is: DBAE/bibliographic instruction, bibliographic instruction-only, no instruction, and DBAE instruction-only.

The Lesser Factors

Table 4 gives the descriptive data for the posttest group scores by the lesser factors of gender, proximity of

Table 3

Means and Standard Deviations of the Demonstration and Posttest Scores for the Four Groups

		Demo.		Posttest	
Group	n	M	SD	M	SD
None	12	34.50	16.72	19.16	15.13
DBAE	4	44.00	21.23	8.50	10.12
Bibliog.	15	37.00	16.21	25.60	22.30
DBAE/Bibliog.	6	48.00	22.26	29.83	27.42

Table 4

Mean Scores and Standard Deviations of Posttest Group Scores x Three Lesser Factors: Gender, Masters, and Proximity

		Bibliographic Training					
		no			yes		
		n	M	SD	n	M	SD
Bibliographic training x DBAE training x gender							
No DBAE training	Male	2	34.50	21.92	4	42.75	39.93
	Female	10	16.10	12.80	11	19.36	7.58
DBAE training	Male	.	.	.	1	23.00	.
	Female	4	8.50	10.12	5	31.20	30.42
Bibliographic training x DBAE training x proximity							
No DBAE training	0-14 mins.	6	25.83	17.34	5	37.80	35.42
	15-29 mins.	5	13.80	10.38	8	19.63	10.53
	30+ mins.	1	6.00	.	2	19.00	7.07
DBAE training	1-14 mins.	1	0.00	.	1	32.00	.
	15-29 mins.	2	10.00	14.14	5	29.40	30.63
	30+ mins.	1	14.00	.	.	.	.

Table 4 (Continued)

		Bibliographic Training					
		no			yes		
		n	M	SD	n	M	SD
Bibliographic training x DBAE training x education							
No DBAE training	Masters	3	25.00	22.60	4	19.75	6.02
	No Masters	9	17.22	13.04	11	27.73	25.82
DBAE training	Masters	1	0.00	.	6	29.83	27.42
	No Masters	3	10.33	10.26	.	.	.

place of work to ARC, and possession of a Masters degree. Because these factors were not figured into the original design of the study, they were not evenly distributed among the four groups. As a result, some of the possible combinations listed in the table did not occur. The highest mean group posttest score by gender was achieved by males who had received the bibliographic instruction-only. When considering proximity, the highest mean score was achieved by the group that had received bibliographic instruction-only and whose work was located 14 minutes or less in driving time from the ARC. And finally, the highest mean score when considering possession of a Masters degree was achieved by the group that had received both forms of instruction and whose members had received their Masters degree.

Report of the Inferential Data Analyses

Testing of the Research Hypotheses

A two-way analysis of variance was conducted on the posttest scores to determine whether DBAE instruction, bibliographic instruction, or an interaction of the two had a significant effect on achievement, with .05 being the acceptable level of significance. The research hypotheses under study were:

H(R)1 Groups that receive bibliographic instruction score significantly higher on a concept map test than those groups that do not receive the instruction.

H(R)2 Groups that receive DBAE instruction score

significantly higher on a concept map test than those groups that do not receive the instruction.

H(R)3 The group that receives both bibliographic and DBAE instruction scores significantly higher on a concept map test than those groups that do not receive both forms of instruction.

H(R)4 The group that receives neither bibliographic nor DBAE instruction scores significantly lower on a concept map test than those who receive either or both forms of instruction.

The data in Table 5 show that the main effects for DBAE and for bibliographic instruction did not attain significance. There was also no significant interaction between DBAE and bibliographic instruction. The p value (.0777) for the group that received bibliographic instruction-only came the closest to approaching the accepted alpha level of $p < .05$. Based on the findings of this analysis, the four research hypotheses must be rejected.

Correlation of Demonstration and Posttest Scores

A two-way analysis of covariance was performed to determine whether group demonstration concept map scores could be significantly correlated with posttest concept map scores. As Table 6 reports, no significant correlation between the scores could be found. This indicates that demonstration concept map performance could not be used to predict posttest concept map

Table 5

Two-Way Analysis of Variance: DBAE Instruction, Bibliographic Instruction, and DBAE x Bibliographic Instruction

Source	df	ms	F	p[1]
Total	36			
DBAE	1	73.03	0.18	.6759
Bibliog.	1	1360.56	3.13	.0777
DBAE x Bibliog.	1	391.78	0.55	.3357
Residual	33	410.46		

[1]Note. None of the values came close to the critical value of $p < .05$.

Table 6

Two-Way Analysis of Covariance: Group Posttest Scores with Demonstration Scores as Covariate

Source	df	ms	F	p[1]
Total	36			
DBAE	3	232.16	0.65	.5912
Bibliog.	1	1152.11	3.21	.0836
DBAE x Bibliog.	3	416.01	1.16	.3421
Residual	29	358.82		

[1]Note. None of the values came close to the critical value of $p < .05$.

performance.

Testing of Unhypothesized Interactions

An analysis of variance was used to test for possible unhypothesized three-way interactions between the test scores of the four groups and the factors of gender, proximity of job to the ARC, and possession of a Masters degree. The results of this analysis has been broken down into three tables. Tables 7-9 indicate that there were no significant three-way interactions between group posttest scores and gender, proximity, or possession of a Masters degree.

Significance of Concept Map Components

To determine if the score on each of the concept map components (relations, hierarchy, cross-links, and examples) contributed significantly to the total concept score, a multiple linear regression analysis was used. All four of the components were found to account significantly (at $p = .01$) for the variability of the posttest concept map score.

Report of the Follow-up Analyses

It was assumed when this study was designed that there would be no missing scores in the data set. However, due to illness, two subjects were absent for the concept map training session (one from the DBAE/bibliographic instruction group, and one from the group that received neither form of instruction), while three were absent from the posttest (in this case, all were from the group

Table 7

Factorial Analysis of Variance: Group Posttest Scores, Gender, and Group Posttest Scores x Gender

Source	df	ms	F	p[1]
Total	36			
Group	3	268.86	0.71	.5522
Gender	1	526.89	1.40	.2466
Group x Gender	2	326.05	0.86	.4317
Residual	30	377.34		

[1]Note. None of the values came close to the critical value of $p < .05$.

Table 8

Factorial Analysis of Variance: Group Posttest Scores, Proximity, and Group Posttest Scores x Proximity

Source	df	ms	F	p[1]
Total	36			
Group	3	426.97	0.95	.4327
Proximity	2	103.37	0.23	.7968
Group x Proximity	5	135.33	0.30	.9084
Residual	28	451.21		

[1]Note. None of the values came close to the critical value of $p < .05$.

Table 9

Factorial Analysis of Variance: Group Posttest Scores, Masters, and Group Posttest Scores x Masters

Source	df	ms	F	p[1]
Total	36			
Group	3	391.93	.90	.4547
Masters	1	62.77	.14	.7075
Group x Masters	2	192.08	.44	.6487
Residual	30	437.53		

[1]Note. None of the values came close to the critical value of $p < .05$.

that received neither form of instruction). It was decided that gaps in the data would be filled by determining the mean score of the group to which a particular missing score belonged, and using that score as a logical substitute for the missing score.

Chapter Summary

The four hypotheses of this study investigated the effects of DBAE and bibliographic instruction on library skills as measured by a concept map score. This chapter presented descriptive and inferential data that lead to the rejection of the four hypotheses. In addition to the main factors under study, other lesser factors were analyzed for any unhypothesized three-way interactions that may have occurred. No evidence of significant three-way interactions could be found for any of these lesser variables.

In addition to presenting the data concerning the main and lesser factors of this study, this chapter presented data having to do with two additional analyses that were performed. These analyses found that demonstration concept map scores could not be significantly correlated with posttest concept map scores, and that all four concept map components contributed significantly to the variability of the total posttest concept map score. Finally, this chapter explained the process used to replace missing concept map scores.

Chapter V

Discussion

Overview of the Study

This study investigated the use of the concept map to assess the effects of both bibliographic and Discipline-Based (DBAE) instruction on the library skills of elementary art teachers in a visual resource center. A 2 x 2 factorial posttest-only control group design, an experimental design, was chosen for this study. The two independent variables, bibliographic and DBAE instruction were operationalized as follows. Bibliographic instruction consisted of a one-hour session during which the subjects were asked to perform tasks that actively involved them with the reference tools of the Arts Resource Center (ARC). DBAE instruction, which was factored into the design of the study, means the participation of a subject in a past J. Paul Getty DBAE Institute.

The dependent variable, library skills, was operationalized as the subject's score on a concept map. A concept map can be defined as a "device for representing the conceptual structure of a discipline or segment of a discipline in two dimensions" (Schmid & Telaro, 1990). The concept map was originally designed by Novak in 1972 to serve as an instructional tool (Novak, 1990), and it has been widely used as such in the field of science education (Schmid & Telaro, 1990). Concept mapping has also been used by

science educators for assessment purposes, because it yields more than a score; "concept mapping allows one to observe the learning itself" (Novak & Ridley, 1988, p. 11).

Concept maps have been little used in library and information science thus far (Sherratt & Schlabach, 1990), and a search of the art education literature found no evidence that it has ever been used in art education. This study can, therefore, be considered exploratory both for the disciplines of library and information science and for art education, since it appears that no other research has specifically tested the potential value of concept mapping to quantitatively assess the effects of either bibliographic or DBAE instruction. This study is also to be considered exploratory for its attempt to identify correlations between the two main factors and the following lesser factors: gender, proximity of work to the ARC, and possession of a Masters degree.

Discussion of Findings

The Main Factors

The following are the research hypotheses that were under study:

H(R)1 Groups that receive bibliographic instruction score significantly higher on a concept map test than those groups that do not receive the instruction.

H(R)2 Groups that receive DBAE instruction score

significantly higher on a concept map test than those groups that do not receive the instruction.

H(R)3 The group that receives both bibliographic and DBAE instruction scores significantly higher on a concept map test than those groups that do not receive both forms of instruction.

H(R)4 The group that receives neither bibliographic nor DBAE instruction scores significantly lower on a concept map test than those who receive either or both forms of instruction.

A two-way analysis of variance was used to test the research hypotheses, the alpha level of .05 being the level of significance adopted by this study. The results of this analyses lead to the rejection of all four of the research hypotheses and the acceptance of the null hypotheses. There appeared to be no statistically significant differences among the four groups under study. Of the four groups, the bibliographic instruction-only group came the closest to achieving significance ($p = .0777$).

It can be concluded then, that for this sample, the null hypotheses were accepted. The groups that received bibliographic instruction did not score significantly higher on a concept map test measuring library skills than did those groups that did not receive the instruction. Likewise, DBAE instruction did not result in significantly higher scores for those who had received

that form of training. And finally, the groups that received both forms of instruction did not score significantly higher than all other groups.

Additional Findings

The result of the analysis of variance that tested for possible three-way interactions between the test scores of the four groups and the lesser factors (gender, proximity, and masters) indicated that no significant three-way interactions occurred. A two-way analysis of covariance found that group demonstration concept scores could not be significantly correlated with posttest concept map scores ($p = .4317$). And finally, all of the concept map components contributed significantly (in this case $p < .01$) to the total posttest concept map score.

Discussion of Limitations

The limitations of this study are many, and they have to do with almost every aspect of the study. Had the research hypotheses been supported, it could have been concluded that the forms of training were successful. The results as they stand, however, are confounded. Did the two main factors under consideration (bibliographic and DBAE instruction), as well as the four lesser factors (gender, masters, proximity, and years of teaching experience) really have no effect on library skills, and therefore the concept maps drawn by the elementary art teachers were an accurate reflection of this reality? Or did one or more

of these factors really contribute to better library skills, and the concept maps were not an accurate indicator of the knowledge and skills that the art teachers possessed?

It is possible that the concept maps were, in fact, an accurate reflection of the teachers' library skills, but without a second test form with which to compare results, it is impossible to say whether or not concept mapping is a valid tool of assessment in terms of its ability to produce a score that truly reflects the knowledge that a learner possesses. Wallace and Mintzes (1990) were prudent to use a more conventional testing instrument along with concept mapping to establish its concurrent validity. In hindsight, the value of a second test form becomes very clear. Even so, it is easy to find fault with the two forms of training, and to give explanations for why they may not have been effective. These and other limitations of the study will now be discussed.

Subject Selection

There were originally 42 elementary art teachers who were eligible to take part in this study. However, five teachers declined saying that they did not want to be bothered. It is of course impossible to verify, but these teachers gave the impression that they would probably have made uncooperative subjects had they participated. If this is indeed the case, then it is possible that their absence could have caused the

bibliographic and/or the DBAE instruction to appear to be more effective than these forms of instruction actually were, lowering the external validity of the study.

Bibliographic Instruction

Insufficient instruction time

The bibliographic instruction was described as a single training session using task lists to involve those teachers in the experimental group with the bibliographic tools of the ARC. One session may have been an adequate amount of instruction time, had not an ice storm occurred on the morning of the session. Teachers arrived late in what appeared to be in a much harried condition, and the starting time had to be delayed until they had all arrived. This caused the bibliographic instruction time to be lessened from 60 to 40 minutes. Because the teachers were required to attend a meeting immediately after the allotted time period for the bibliographic instruction, they could not be asked to stay longer to recover the time lost at the beginning of the session. Although most of the teachers were able to complete most of their task sheets, little time remained for the last task, a much broader question which was to have been discussed and researched as a group.

Distracted subjects

Another problem with the bibliographic instruction session concerns the lack of seriousness that some of the teachers gave to

the session. Perhaps the excitement of the storm contributed to this, but some teachers were obviously more involved with socializing than with working with their task sheets.

DBAE Instruction

Inadequate number of DBAE subjects

First of all, the sizes of the DBAE groups (n = 4 and n = 6) were simply not adequate for any generalization about their scores to have a great deal of meaning. In another year or two, it is anticipated that approximately half of the Columbus Public School elementary art teachers will be trained in the DBAE approach. If the study could have been delayed until that time, the DBAE groups in the study could be larger, increasing the likelihood of valid generalizations.

Problems with indexing of visuals

It could, in any case, be debated whether or not DBAE instruction would ever prove to be a factor that would affect the library skills of art teachers. Visual art collections are, according to Stam and Giral, particularly difficult to organize and index because often "the visual itself does not naturally suggest the words that should be used to characterize its aspects" (1988, p. 118). Visuals can be indexed in a variety of ways, and it would be almost impossible for the collection of the ARC to be indexed to suit the varied searching styles of all of the elementary art teachers. Even if DBAE training did, in fact,

produce a teacher more motivated to locate visuals in the ARC, it may not necessarily follow that this increased motivation would translate into an increased ability to use the bibliographic tools. Most of the tools in the ARC index by such access points as "artist" or "artistic movement." The collection, however, is not indexed by such access points as "media" or "nationality." If a teacher tends to search for visuals with the latter topics in mind, then he or she would soon find the ARC's bibliographic tools to be irrelevant. In this situation, DBAE instruction may simply produce a more persistent browser, rather than a more systematic searcher.

The Lesser Factors

Gender, proximity, and Masters

That gender, proximity of school to the ARC, and possession of a masters degree all seemed to have no effect on the concept map posttest is not surprising for the following reasons. Again there was a problem with group sizes. Few of the total were male (n = 7), and few had earned their masters (n = 8). The factor, proximity to the ARC may have been confounded in a number of ways. It does not take into account how far the teachers' homes are from the ARC; a teacher may work at a school 30 minutes in driving time from the ARC, but reside only five minutes away, making use of the ARC convenient after all. The proximity factor also does not take into account that some teachers must work at more than one

elementary, and it does not take into account the fuel efficiency of a teacher's car. Both considerations could affect a teacher's willingness to make a special trip to the ARC. Closer proximity may not translate into an increased desire to use the ARC, in any case. It would almost be surprising if the findings did show that proximity plays a role in determining library skills.

Years of teaching experience

Originally, it was intended that years of teaching experience would also be considered as one of the lesser factors. However, the consideration of years of teaching experience as a factor proved to be problematic, due to the changing hiring practice of art teachers by the Columbus Public Schools over the years. Many of the teachers with the most experience were members of the original ten teachers hired to teach elementary art. Before that time, art was not part of the curriculum for elementary school children. These teachers were hired from an existing pool of Columbus Public School teachers; most were not specifically art trained. Over the years, the total number of allotted art teachers was gradually increased. Five years ago, however, several new elementary art positions were created. For this reason, a very high percentage (approximately 65%) of the elementary art teachers have five years or less of teaching experience. The fact that art certification has in recent years become a requirement for newly-hired art teachers makes it

difficult to consider "years of experience" as a factor that can be extracted for study. The teachers with the most experience are, as a rule, also the teachers who are not specifically certified to teach art.

The Concept Map Training

Insufficient training time

A serious limitation to this study was the insufficient time, (in this case only a single one-hour session) that was given to the teaching of the concept mapping technique itself. Novak (1990) discusses the difficulties of introducing concept mapping to junior high school students, since they have already adapted to primarily rote-mode learning methods. If concept mapping is such a foreign technique for junior high school students, how much more strange would it be for adult learners? Indeed, a few of the teachers expressed their frustration that they did not really understand how concept mapping worked. Others seemed intimidated at the prospect of being tested with such an unfamiliar tool. It is certainly possible that a teacher in the experimental group could have learned a great deal in the bibliographic instruction session, but a lack of skill in concept mapping may have prevented evidence of this learning to be revealed. Considering that researchers recommend that anywhere from two weeks (Schmid & Telaro, 1990) to two years (Novak, 1990) be devoted to the instruction of the concept map technique, this study's single one-

hour session was clearly inadequate.

Demonstration topic choice

Another limitation of this study related to the concept map training session concerns the choice of "art" as the topic for the demonstration concept map. This topic was chosen because it was assumed that such a familiar topic would be easy for the subjects to map. It was not realized until the data analysis, however, that the use of such a topic may have had a confounding effect on the demonstration concept map scores, since knowledge of the topic "art," or at least the ability to easily categorize it, could have been affected by DBAE instruction. If this were indeed the case, then that could explain why the two groups that had received the DBAE training scored better on the demonstration concept than the two groups that had not. It would also mean that the confounding of the two-way analysis of covariance that had been performed to determine whether group demonstration concept map scores could be significantly correlated with posttest concept map scores.

The Concept Map as an Assessment Tool

Kagan, in her article that describes five different approaches to assessing teacher cognition, criticizes studies that utilize concept mapping because they "usually assume the existence of some incontestable exemplary structure; the closer the resemblance between participants' maps and the target map, the more 'progress' one can infer" (1990, p. 450). As was mentioned

earlier, attempts were made in this study not to use the sample map drawn by the instructor as anything more than an example. It was always recognized that the same information could be validly represented in a number of ways (Schmid & Telaro, 1990). This possibility of a variety of valid maps, however, leads to the recognition of another problem with the use of concept maps as an assessment tool: concept mapping is a test form that rewards verbosity and penalizes those who are concise. The scoring method of Novak and Gowin (1984), for example, gives equal weight to all relationships, the only criterion being that each relationship be meaningful. No consideration is give for varying degrees of importance that may exist among the individual relationships. For this reason, one questions whether concept maps should be numerically scored at all. Perhaps they would be better used for qualitative, rather than quantitative assessment. Even Novak and Gowin (1984, p. 97), seem to downplay the relevancy of numerically scoring concept maps, saying:

> Concept maps can be similar to paintings; you either like one or you do not. A simple qualitative judgment of students' concept maps is all that some teachers want. In our early work, we were often asked, "How does one score the children's concept maps?" We were more interested in representing what children's conceptual framework looked like before and after instruction, or over a span of years. Scoring was in many

respects irrelevant, for we were looking for qualitative changes in the structure of children's concept maps. But because we live in a numbers-oriented society, most students and teachers want to score concept maps. So over the years we have devised a variety of scoring procedures . . . .

Conclusions

This study was unable to show that bibliographic and/or DBAE training resulted in significantly improved library skills for elementary art teachers in a visual arts collection. The value of concept mapping as a quantitative tool to assess the effects of both bibliographic and DBAE instruction remains unclear, since there was employed no second form of assessment with which to compare the concept map score results. It remains for future research to determine the concurrent validity of concept mapping as an quantitative assessment tool. Concept mapping does, however, hold promise as a form of evaluation to qualitatively assess the effects of bibliographic instruction, since it is a technique that seems to graphically represent both what the learner does and does not understand.

Recommendations for Further Research

Although the concept map scores in this study did not reveal that bibliographic instruction had an effect on the library skills of the subjects, the maps themselves did seem to reveal misconceptions that were held by the art teachers about how to use

the various bibliographic tools. Concept mapping, then does seem to have research applications in the field of library and information science as a qualitative assessment tool for use by librarians in user education. No special equipment is required, and it is a form of assessment that could be adapted to any library setting. If, however, a quantitative assessment is desired, then a second test form should be employed along with concept mapping to establish concurrent validity (Wallace & Mintzes, 1990). It should be cautioned, however, that a period of at least two weeks may be required to properly teach the concept mapping technique (Schmid & Telaro, 1990). For this reason, concept mapping may have more practical applications for use in library and information science education. Concept mapping could perhaps be included as part of the course of study. It is a technique that could be particularly useful for the teaching of reference and information services courses (Sherratt & Schlabach, 1990), where concept mapping could be employed both to reveal what the student knows and to assess how well particular concepts and processes have been taught. Concept maps drawn by students could also reveal new and innovative ways to approach the search process.

Concept mapping may also have implications for visual arts librarians as a tool to assess the way their materials are organized. Since a visual arts collection can be indexed in a

variety of ways (Stam & Giral, 1988), concept maps drawn by patrons could reveal the access points that are really needed, but have yet to be created. Such maps could be used as a basis for further indexing. Concept maps could also be used by visual art librarians to both create and evaluate entry terms in an art thesaurus, as Rada et al.(1988) had done with MeSH, the thesaurus used by the National Library of Medicine's bibliographic retrieval system (Medline).

Chapter Summary

This study investigated the use of concept mapping to assess the effects of both bibliographic and DBAE instruction on the library skills of elementary art teachers in a visual arts resource center belonging to the Columbus (Ohio) Public Schools. This chapter contained an overview of the study which discussed the study's design (a 2 x 2 factorial posttest-only control group design), the variables (DBAE and bibliographic instruction), and the study's assessment tool (the concept map). A brief description of concept mapping and its uses in research thus far were given, with special emphasis on its role as an assessment tool in library and information science. It was offered that this study should be considered exploratory as well as experimental, since no evidence could be found of research that had investigated the use of concept maps to quantitatively assess the effects of bibliographic instruction, let alone DBAE instruction.

The research hypotheses were listed and the findings of the data analyses were given. All four research hypotheses were rejected; no significant difference ($p < .05$) could be found among the mean scores of the four experimental groups. Other findings included the following. No significant three-way interactions occurred between group posttest scores and the three lesser factors under consideration: gender, proximity of job to the ARC, and possession of a Masters degree. Group demonstration scores could not be significantly correlated to posttest scores, and all concept map components contributed significantly ($p < .01$) to the total concept map score.

A discussion of several of the study's limitations followed, the most significant limitation being the study's lack of a second test form with which to compare concept map results. This deficiency makes it impossible to discern whether the forms of instruction really had little or no effect on the subjects' library skills, or whether concept maps were incapable of indicating significant improvements that in reality had occurred. Among the other limitations of this study were problems with the lesser factors, the small sample size, and inadequate bibliographic instruction and concept map training time.

It was concluded that even though the value of the concept map as a quantitative assessment tool to measure the effects of bibliographic and DBAE instruction on library skills remains

unclear, that it still holds promise as a qualititative assessment tool, since it graphically represents what the learner does and does not understand. It was recommended that the concept map be further studied both as a quantitative and qualitative assessment tool, with the warning that a second test form should be employed to establish concurrent validity. In addition, it was advised that adequate time (a minimum of 2 weeks) be allotted for the concept map instruction. And finally, possible uses for concept mapping in library and information science education and in visual art librarianship were given.

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KENT STATE UNIVERSITY HUMAN SUBJECTS REVIEW BOARD
APPLICATION FOR APPROVAL TO USE HUMAN SUBJECTS IN RESEARCH

LOG NUMBER 91-324

REVIEW DATE _____

Please type all information. HANDWRITTEN FORMS CANNOT BE ACCEPTED.

Name Carla J. Schick Telephone 365 6681 #246 Address 1087 Carrousel Dr. E. Reynoldsburg, OH 43068

Department Library Science Faculty Rank/Student Status MLS Student

Project Title The Use of Concept Mapping to Evaluate the Effects of both Bibliographic and Discipline-Based Art Education Instruction on the Library Skills of Elementary Art Teachers in a Visual Resource Center

Type of Project: __ Faculty Research __ Externally Funded (Agency: _____)
X Student Directed Research (Advisor: Prof. Carl Franklin)
__ Thesis __ Dissertation __ Course Requirement (course number: _____)
__ Other (Specify: _____)

Duration of Project: Starting Date Feb. 11, 1991, **but not before approval is obtained.**

Ending Date May 11, 1991

I certify that the research procedures for this project, and the method of obtaining consent (if any), as approved by the Human Subjects Review Board, will be followed during the period covered by this research project. Any future changes will be submitted for Board review and approval prior to implementation.

Carla J. Schick — Principal Investigator — 1/27/91 Date

Carl Franklin — Faculty Advisor (if PI is a student) — 1/27/91 Date

ACTION TAKEN:

REVIEWED

✓ Level I, Category 3

__ Level II, Category ___

__ Level III, To Full Board

[signature] — Departmental Reviewer — 2/6/91 Date

_____ — Co-Reviewer (Level II) — Date

KSU HUMAN SUBJECTS REVIEW BOARD

✓ Approved, Level I

__ Approved, Level II

__ Approved by Board __ Contingent __ Disapproved

[signature] — Administrator, HSRB — 2/11/91 Date

[signature] — Chairperson, HSRB — 2-12-91 Date

COMMENTS OR CONTINGENCIES:

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PART I: Please answer the following by circling the correct response:

Yes (No) 1. Will subjects be identifiable to anyone other than the researchers through records, responses or identifiers linked to the subjects?

Yes (No) 2. Could subjects be at risk of criminal or civil liability, damage to employability or to financial standing, or undue embarrassment, if responses became known outside this research project?

Yes (No) 3. Does research deal with sensitive aspects of subjects' behavior, such as illegal conduct, drug use, sexual behavior, or use of alcohol?

Yes (No) 4. Does research involve the collection or study of existing data from sources not publicly available? (existing data can be documents, records, pathological specimens or diagnostic specimens)

Yes (No) 5. Will subjects be video/audio taped?

(Yes) No N/A 6. Are subjects free to withdraw at any time without penalty?

Yes (No) 7. Is there deception of subjects that is unexplained at end of project?

Yes (No) 8. Does research deal with subjects who are children under eight years, not-legally-competent adults, mentally handicapped, physically handicapped, prisoners, or pregnant women? (circle appropriate group or groups)

.....

PART II: Summarize proposed project and procedures to which humans will be subjected. (DO NOT WRITE "SEE ATTACHED") Consent form(s), questionnaire(s), etc. should be included with the application.

This study will investigate the effects of bibliographic instruction and Discipline-Based Art Education (DBAE) training on the library skills of elementary art teachers in the Columbus Public Schools. Recent changes in the organization of the Arts Resource Center, a visual arts collection created to provide visuals for the art teachers of the Columbus Public Schools, have made library instruction desirable so that the collection will be accessible to the teachers even when no staff person is present to assist them. A 2 x 2 factorial design will be used to measure the interactive effects of the two forms of training. Bibliographic instruction will consist of a one-hour session during which the teachers in the experimental group will be given a list of tasks to perform that will actively involve them in the use of the Arts Resource Center. Appendix A is a sample task list. DBAE instruction means the past participation of a teacher in a J. Paul Getty three week training session. Approximately one-third of the elementary teachers have received this instruction that is being factored into this study because of its emphasis on the use of visual resources in art education. Concept mapping, a device for representing the conceptual structure of a discipline, or segment of a discipline in two dimensions, will be the assessment tool. Appendix B is a sample concept map that depicts the steps one would take to locate resources in the Arts Resource Center on the topic, "surrealism." Appendix C summarizes the system that will be used to score the concept maps.

The factoring in of the possible effects of DBAE training on the outcome will be accomplished by splitting the list of teachers who have received DBAE training and then randomly assigning half to the control group and half to the experimental group. The procedure of the study will be as follows:

1. Feb. 11 All elementary art teachers will be introduced to concept mapping.
2. Feb. 15 The experimental group will receive bibliographic instruction.
3. Feb. 18 All teachers will be asked to draw concept maps depicting the steps they would take to find resources for a given art topic.
4. Feb. 25 All teachers will again be asked to map steps they would take to find resources for a topic similar in complexity to the one given the previous week. The scores of these maps will be used for correlation with the scores of the first maps.

Appendix D is the consent form that will be given to the teachers.

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PART III: Please answer all of the following items. If not applicable to your project, write "None" or "NA", as appropriate. If more space is needed, use additional paper.

1. How will the subjects be selected? (Include rationale for use of special classes of subjects such as pregnant women, children, institutionalized mentally disabled, prisoners, or those whose ability to give voluntary informed consent may be in question.)

The elementary art teachers have been selected as the subjects for this study because they are much more homogeneous in their exposure to the Arts Resource Center than are the middle and high school art teachers. This is because only the elementary art teachers are required to attend a weekly meeting at the building where the Arts Resource Center is housed. At the end of the meeting they are usually allotted time to search for resources.

2. Briefly describe the characteristics of your population(s): the size of your sample, the ethnic background, sex, age, state of health and the criteria for inclusion or exclusion of subjects.

The sample will consist of the approximate 42 elementary art teachers, the majority being female, Caucasian, and ranging in age from the mid-twenties to the late forties. All appear to be in good health. Other than the criterion that the subject be an elementary art teacher, other criteria include the following: the subject must not be a Kent State Library Science student. The subject must not have work experience in the Arts Resource Center. The last two criteria would only eliminate two teachers.

3. Identify any risks - physical, psychological, and/or social - to which your subjects may be exposed as a result of participation in your project (beyond the risks normally encountered in everyday life). What safeguards will you use to protect the subjects from these risks, as well as to protect their rights, welfare and privacy? (Never answer "NA")

Risks to the subjects are minimal in this study. The only risk may be a social one, since the elementary art teachers have been singled out to participate. The privacy of the subjects will be protected by using forms for the concept maps that will be coded rather than signed.

4. How will the subjects be informed of the risks to which they will be subjected?

Before the subjects are asked for their consent to participate they will be given the reason that their group was chosen. This information is also contained in the informed consent form, as is an assurance that their anonymity will be protected in this study.

5. How will you obtain "informed consent"? (append form(s) to be used)

The subjects will be given a brief description of the study after which they will be asked to sign the consent form, if they agree to participate. Appendix D is the form that will be used.

6. Describe alternative procedures that were considered and why they will not be used.

None

7. Describe the benefits expected to be gained from this project. (This should include any direct benefits to the subjects as well as any general gain in knowledge.)

The results of this study could provide insights into how bibliographic instruction and/or Discipline Based Art instruction can affect an art teacher's ability to utilize the Arts Resource Center. Additionally, it is hoped that the library skills of those in the experimental group will improve as a result of the bibliographic training that they will have received.

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8. In which Kent State University faculty or departmental office will the signed consent forms be kept? (Consent forms must be kept on campus, not in a private home or office.) If the study does not involve consent forms, answer "NA". The original signed consent forms will be kept at the School of Library Science office at Kent; copies will be kept at the extension Library Science campus in Columbus.

9. If deception is involved, describe its nature, why it is necessary, and how subjects will be debriefed. Include any feedback, educational or otherwise, which subjects will receive.

NA

10. What do you intend to do with the data collected? (i.e., publish data, present paper, erase tapes, etc.)

A Master's research paper will be written; the possibility exists that it may eventually be published. Additionally, the results of this study will be communicated to the art supervisor.

11. Describe any form of compensation to subjects. (i.e., money, grade, extra credit, etc. If extra credit or grade is given to students who participate in the project, what opportunity for extra credit or grade is provided to students who choose not to participate?)

Compensation will not be given to the subjects, however, a drawing will be held for a subscription to an art education journal as an incentive and sign of appreciation for the teachers.

12. If you will be using children under 18, explain in detail how you will obtain assent (for children under 12; see page 5) or consent (for children 12 to 18). If assent/consent will be obtained orally, supply a script of what you will say and how you will give the children the opportunity to say "yes" or "no".

NA

13. If the project involves drawing blood, taking tissue samples, giving injections, etc., what are the qualifications/certifications of the person(s) doing this?

NA

14. a. If the subjects' personal files (school, medical, etc.) will be read, where are the files kept and who will gather the information?

NA

b. Has permission been obtained to gather this information? (Attach documentation)

NA

c. Do the subjects (and/or their parents or guardians) know that these files will be read? If no, explain.

NA

15. a. Will the results be disseminated to the subjects (and/or their parents or guardians)?

Test results will be disseminated on a one-to-one basis to those subjects that express interest.

b. If so, explain the qualifications of the person(s) interpreting the results.

As the designer of the study, the library science student is best qualified to interpret the results.

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School of Library Science
(216) 672-2782

Kent STATE UNIVERSITY
Kent, Ohio 44242-0001

Consent Form:
The Use of Concept Mapping to Evaluate the Effects
of both Bibliographic and Discipline-Based Art Education
Instruction on the Library Skills of Elementary
Art Teachers in a Visual Resource Center

I want to do research on the use of concept mapping to evaluate the effects of both bibliographic and Discipline-Based Art Education instruction on the library skills of elementary art teachers in a visual resource center. I want to do this because the results of this study could provide useful insights into how a library training session and/or DBAE training can affect an art teacher's ability to utilize the Arts Resource Center. I would like you to take part in this project. If you decide to do this, you will be asked to receive instruction in constructing concept maps, possibly participate in a training session on how to locate items in the Arts Resource Center, and construct concept maps in two separate sessions. Total time commitment required from you is approximately four hours over a three week period. Your group, the approximate 42 elementary art teachers, has been chosen for this study because you are much more homogeneous in your exposure to the Arts Resource Center than are the middle and high school art teachers.

Your anonymity is assured; you will not be asked to sign your name to the concept maps that you draw. Instead, the forms that you will use for drawing the concept maps will be coded to indicate to which group you belong. Neither I nor the art supervisor will know the the identity of the constructor of any particular concept map.

If you take part in this project, you will be assisting me, as your

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School of Library Science
(216) 672 2782

Kent STATE UNIVERSITY
Kent Ohio 44242-0001

Consent Form, cont.:
The Use of Concept Mapping to Evaluate the Effects
of both Bibliographic and Discipline-Based Art Education
Instruction on the Library Skills of Elementary
Art Teachers in a Visual Resource Center

library aide, to make the Arts Resource Center a more convenient facility for you and your colleagues to use. You will also be helping the art supervisor to evaluate a possible benefit of Discipline-Based Art Education instruction. Taking part in this project is entirely up to you, and no one will hold it against you if you decide not to do it. If you do take part, you may stop at any time.

If you want to know more about this research project, please call me at 864-7155, or my advisor, Mr. Carl Franklin, at 292-7746. The project has been approved by Kent State University. If you have questions about Kent State University's rules for research, please call Dr. Adriaan de Vries, Telephone (216) 672-2070.

You will get a copy of this consent form.

Sincerely,

Carla J. Schick

Carla J. Schick
Masters of Library Science Student

CONSENT STATEMENT

I agree to take part in this project. I know what I will have to do and that I can stop at any time.

_____ _____

Signature Date

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Appendix B

Concept Map Worksheet

1. Gender of participant: Male ____ Female ____
2. How close in driving time is the school where you work to the ARC? 0-14 mins. ____ 15-19 mins. ____ 30+ mins. ____
3. Do you have your Masters degree? Yes ____ No ____
4. How many years of teaching experience (counting this year) do you have? ___

Appendix C

Categories of Formats in the ARC

Format:	Organized:	Indexed:
Oversized Print Reproductions	Alphabetically by artist in topic drawers	By artist in "Print Inventory"
Books	By Dewey Decimal system	By author, title, and subject in card catalog
Boxed Prints	By topic	By name of box in "Boxed Print" Inventory"
Educational Packages	By topic	By name of package in "Educational Package Inventory"
Boxed Slides	By topic	By name of box in "Boxed Slide Inventory"
Slide Packets	By topic	By name of packet in "Slide Packet Inventory
Discovering Art History Slides	By artistic movement	By movement, artist, and title of artistic work

Appendix D

Task Lists

Task List #1

1. Who are some of artists considered to be of the Ash-can School?
   Procedure: Look up "Ash-can School" in the Oxford Dictionary of Art to locate names of artists.
2. Does the ARC own a set of boxed prints called "Chairs and Furniture?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Print list under "Chairs and Furniture."
3. Find the book, Art as Image and Idea.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.
4. Does the ARC own an educational package called "Bird Masks?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Bird Masks." Educational Packages are shelved beneath the Reinhold Visuals.
5. Find the print reproduction of Brayer's "Chevaux dans la Camargue."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is a list of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
6. Does the ARC own a set of boxed slides on the topic of "Advertisting?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Advertising." Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
7. Does the ARC own a slide packet called "Town, City, and Park?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Town, City, and Park." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
8. How can one find the issue of Art in America that contains an article on "Renoir?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other

periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.

Final Question:

Suppose you wanted to find as much information and as many visuals as possible on the topic, "cubism." How would you procede? This question is for group discussion.

Task List # 2

1. Who are some of artists who painted in the "Cloisonnism" style?
   Procedure: Look up "Cloisonnism" in the Oxford Dictionary of Art to locate names of artists.
2. Does the ARC own a set of boxed prints called "Computer Art?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Print list under "Computer Art" Boxed Prints are located on the center shelves.
3. Find the book, Guide to Visual Arts and Crafts in Ohio.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.
4. Does the ARC own an educational package called "Fantasy?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Fantasy" Educational Packages are shelved beneath the Reinhold Visuals.
5. Find the print reproduction of Haymson's "Rockefeller Plaza."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is a list of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
6. Does the ARC own a set of boxed slides on the topic of "Cassatt?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Cassatt." Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
7. Does the ARC own a slide packet called "Town, City, and Park?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Town, City, and Park." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
8. How can one find the issue of Art in America that contains an article on "Rivera?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.

Final Question:

Suppose you wanted to find as much information and as many visuals as possible on the topic, "cubism." How would you proceed? This question is for group discussion.

Task List #3

1. Who are some of artists considered to be of the Euston Road School?
   Procedure: Look up "Euston Road School" in the Oxford Dictionary of Art to locate names of artists.
2. Does the ARC own a set of boxed prints called "Marine Life?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Print list under "Marine Life" Boxed Prints are located on the center shelves.
3. Find the book, Primitive Worlds.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.
4. Does the ARC own an educational package called "Dutch Painting?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Dutch Painting" Educational Packages are shelved beneath the Reinhold Visuals.
5. Find the print reproduction of Cassatt's "Boating Party."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is a list of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
6. Does the ARC own a set of boxed slides on the topic of "Clocks?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Clocks." Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
7. Does the ARC own a slide packet called "David Smith: Sculpture?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "David Smith: Sculpture." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
8. How can one find the issue of Art in America that contains an article on "Mayan Art?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.

Final Question:

Suppose you wanted to find as much information and as many visuals as possible on the topic, "cubism." How would you proceed? This question is for group discussion.

Task List #4

1. Does the ARC own a set of boxed prints called "Masks?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Print list under "Masks" Boxed Prints are located on the center shelves.
2. Find the book, Coming to our Senses.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.
3. Does the ARC own an educational package called "Great Masterpieces?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Great Masterpieces" Educational Packages are shelved beneath the Reinhold Visuals.
4. Find the print reproduction of Antes' "Interior IV."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is a list of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
5. Does the ARC own a set of boxed slides on the topic of "Color?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Color" Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
6. Does the ARC own a slide packet called "Fantasy?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Fantasy." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
7. How can one find the issue of Art in America that contains an article on "Frank Stella?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
8. What artists were considered to be Post-Impressionists?
   Procedure: Look up "Post-Impressionism" in the Oxford Dictionary of Art to locate names of artists.

Final Question:

Suppose you wanted to find as much information and as many visuals as

possible on the topic, "cubism." How would you proceed? This question is for group discussion.

Task List #5

1. Does the ARC own a set of boxed prints called "Birds?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Print list under "Birds" Boxed Prints are located on the center shelves.
2. Find the book, Arts in Higher Education.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.
3. Does the ARC own an educational package called "Blake?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Blake." Educational Packages are shelved beneath the Reinhold Visuals.
4. Find the print reproduction of Marlez's "Floral."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is a list of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
5. Does the ARC own a set of boxed slides on the topic of "Dance?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Dance" Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
6. Does the ARC own a slide packet called "Fantasy?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Fantasy." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
7. How can one find the issue of Art in America that contains an article on "De Kooning?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
8. What artists were considered to be Expressionists?
   Procedure: Look up "Expressionism"in the Oxford Dictionary of Art to locate names of artists.

Final Question:

Suppose you wanted to find as much information and as many visuals as

possible on the topic, "cubism." How would you proceed? This question is for group discussion.

Task List #6

1. Does the ARC own a set of boxed prints called "Americana?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Print list under "Americana." Boxed Prints are located on the center shelves.
2. Find the book, Through Art to Creativity.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.
3. Does the ARC own an educational package called "Dufy?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Dufy" Educational Packages are shelved beneath the Reinhold Visuals.
4. Find the print reproduction of Corneille's "Blue, Summer, Closed Blinds."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is a list of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
5. Does the ARC own a set of boxed slides on the topic of "Collage?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Collage." Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
6. Does the ARC own a slide packet called "Sculpture?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Sculpture." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
7. How can one find the issue of Art in America that contains an article on "Gris?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
8. What artists were part of the Vorticism movement?
   Procedure: Look up "Vorticism" in the Oxford Dictionary of Art to locate names of artists.

Final Question:

Suppose you wanted to find as much information and as many visuals as possible on the topic, "cubism." How would you proceed? This question is for group discussion.

Task List #7

1. Does the ARC own a set of boxed prints called "Egyptian?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Print list under "Egyptian." Boxed Prints are located on the center shelves.
2. Find the book, Stitchery: Art and Craft.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.
3. Does the ARC own an educational package called "El Greco?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "El Greco" Educational Packages are shelved beneath the Reinhold Visuals.
4. Find the print reproduction of Duerer's "Self-Portrait."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is alist of the print reproductions that are owned by the ARC and the drawer (ordrawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
5. Does the ARC own a set of boxed slides on the topic of "Crayon Techniques?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Crayon Techniques." Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
6. Does the ARC own a slide packet called "Sculpture?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Sculpture." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
7. How can one find the issue of Art in America that contains an article on "Aztec Art?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
8. Find the name of an artist who was a member of a group of Russian Painters called "Wanderers."
   Procedure: Look up "Wanderers" in the Oxford Dictionary of Art to locate an artist's name.

Final Question:

Suppose you wanted to find as much information and as many visuals as

possible on the topic, "cubism." How would you proceed? This question is for group discussion.

Task List #8

1. Find the book, Art of Assemblage.
   Procedure: Look up the title in the author/title drawer of the card catalog.Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.
2. Does the ARC own an educational package called "Flemish Painting?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Flemish Painting" Educational Packages are shelved beneath the Reinhold Visuals.
3. Find the print reproduction of David's "The Oath of Horatii.".
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is alist of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
4. Does the ARC own a set of boxed slides on the topic of "Drawing?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Drawing." Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
5. Does the ARC own a slide packet called "Sculpture?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Sculpture." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
6. How can one find the issue of Art in America that contains an article on "Dada?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
7. What 20th century artists are considered the greatest exponents of fresco?
   Procedure: Look up ..... in the Oxford Dictionary of Art to locate names of artists.
8. Does the ARC own a set of boxed prints called "Children?" If so, find it.
   Procedure: Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Prints list under "Children." Boxed Prints are located on the center shelves.

Final Question:

Suppose you wanted to find as much information and as many visuals as possible on the topic, "cubism." How would you proceed? This question is for group discussion.

Task List #9

1. Find the book, Short History of African Art.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.
2. Does the ARC own an educational package called "Giotto?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Giotto." Educational Packages are shelved beneath the Reinhold Visuals.
3. Find the print reproduction of Constable's "The Hay Wain."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is a list of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
4. Does the ARC own a set of boxed slides on the topic of "Flowers?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Flowers." Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
5. Does the ARC own a slide packet called "Sculpture of Picasso?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Sculpture of Picasso."
   The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
6. How can one find the issue of Art in America that contains an article on "Robert Morris?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
7. What artists created chiaroscuro woodcuts?
   Procedure: Look up "chiaroscuro woodcut" in the Oxford Dictionary of Art to locate names of artists.
8. Does the ARC own a set of boxed prints called "Costumes?"
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Prints list under "Children". Boxed Prints are located on the center shelves.

Final Question:

Suppose you wanted to find as much information and as many visuals as

possible on the topic, "cubism." How would you proceed? This question is for group discussion.

Task List #10

1. Find the book, Arts and Ideas.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.
2. Does the ARC own an educational package called "Longhi?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Longhi." Educational Packages are shelved beneath the Reinhold Visuals.
3. Find the print reproduction of Carravagio's "Bacchus."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is alist of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
4. Does the ARC own a set of boxed slides on the topic of "Figure?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Figure." Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
5. Does the ARC own a slide packet called "Sculpture of Picasso?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Sculpture of Picasso. The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
6. How can one find the issue of Art in America that contains an article on the Chrysler as an art form?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
7. What artists paint in the automatism style?
   Procedure: Look up "Automatism" in the Oxford Dictionary of Art to locate names of artists.
8. Does the ARC own a set of boxed prints called "Design?"
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Prints list under "Design". Boxed Prints are located on the center shelves.

Final Question:

Suppose you wanted to find as much information and as many visuals as

possible on the topic, "cubism." How would you proceed? This question is for group discussion.

Task List #11

1. Does the ARC own an educational package called "Michelangelo?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Michelangelo" Educational Packages are shelved beneath the Reinhold Visuals.
2. Find the print reproduction of Chagall's "Feathers in Bloom."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is a list of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
3. Does the ARC own a set of boxed slides on the topic of "Houses?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Houses" Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
4. Does the ARC own a slide packet called "Sculpture?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Sculpture." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
5. How can one find the issue of Art in America that contains an article on "Robert Morris?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
6. What artists were considered to be Abstract Expressionists?
   Procedure: Look up Abstract Expressionism in the Oxford Dictionary of Art to locate names of artists.
7. Does the ARC own a set of boxed prints called "Human Figure?"
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Prints list under "Human Figure"? Boxed Prints are located on the center shelves.
8. Find the book, Purposes of Art.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.

Final Question:

Suppose you wanted to find as much information and as many visuals as

possible on the topic, 'cubism." How would you proceed? This question is for group discussion.

Task List #12

1. Does the ARC own an educational package called "Landscapes?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Landscapes." Educational Packages are shelved beneath the Reinhold Visuals.
2. Find the print reproduction of Jacob Lawrence's "Parade."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is alist of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
3. Does the ARC own a set of boxed slides on the topic of "Landscape?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Landscape." Boxed Slides are filed alphabetically in the slide drawers on the south wallof the ARC.
4. Does the ARC own a slide packet called "Sculpture?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Sculpture." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
5. How can one find the issue of Art in America that contains an article on "Mondrian?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
6. What artists were considered to be "Action Painters"?
   Procedure: Look up "Action Painting" in the Oxford Dictionary of Art to locate names of artists.
7. Does the ARC own a set of boxed prints called "Gardens?"
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Prints list under "Gardens". Boxed Prints are located on the center shelves.
8. Find the book, Aesthetics: Problems in the Philosophy of Criticism.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.

Final Question:

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possible on the topic "cubism." How would you proceed? This question is for group discussion.

Task List #13

1. Does the ARC own an educational package called "Ernst?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Ernst." Educational Packages are shelved beneath the Reinhold Visuals.
2. Find the print reproduction of Hal's "The Bohemian."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists arearranged alphabetically by last name; to the side of each artist's name is alist of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
3. Does the ARC own a set of boxed slides on the topic of "Leger?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Leger." Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
4. Does the ARC own a slide packet called "Projects in Twentieth-Century Art?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Twentieth-Century Art." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
5. How can one find the issue of Art in America that contains an article on "Leger?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
6. What artists were considered to be of the School of Fontainebleau?
   Procedure: Look up "Fountainebleau, School of" in the Oxford Dictionary of Art to locate names of artists.
7. Does the ARC own a set of boxed prints called "Dance?"
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Prints list under "Dance." Boxed Prints are located on the center shelves.
8. Find the book, Art in Your World.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.

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Task List #14

1. Does the ARC own an educational package called "Lindner?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Lindner." Educational Packages are shelved beneath the Reinhold Visuals.
2. Find the print reproduction of Eakins' "Turning the Stake."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is a list of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
3. Does the ARC own a set of boxed slides on the topic of "Line?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Line."
   Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
4. Does the ARC own a slide packet called "Projects in Twentieth-Century Art?"
   If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Projects in Twentieth-Century Art." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
5. How can one find the issue of Art in America that contains an article on "Nancy Holt?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
6. What artists were in the Hudson River School?
   Procedure: Look up "Hudson River School" in the Oxford Dictionary of Art to locate names of artists.
7. Does the ARC own a set of boxed prints called "Jewelry?"
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Prints list under "Jewelry"? Boxed Prints are located on the center shelves.
8. Find the book, Arttalk.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.

Final Question:

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Task List #15

1. Does the ARC own an educational package called "Leger?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Leger." Educational Packages are shelved beneath the Reinhold Visuals.
2. Find the print reproduction of Bierstadt's "The Rocky Mountains."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is a list of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
3. Does the ARC own a set of boxed slides on the topic of "Mexican Art?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Mexican Art." Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
4. Does the ARC own a slide packet called "Projects in Twentieth Century Art?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Twentieth Century Art." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
5. How can one find the issue of Art in America that contains an article on space photography?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
6. What artists were in The "Group of Seven?"
   Procedure: Look up "Group of Seven" in the Oxford Dictionary of Art to locate names of artists.
7. Does the ARC own a set of boxed prints called "Interior Design?"
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Prints list under "Interior Design." Boxed Prints are located on the center shelves.
8. Find the book, Transfer: Designs, Textures, and Images.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.

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Task List #16

1. Does the ARC own an educational package called "Rembrandt?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Rembrandt" Educational Packages are shelved beneath the Reinhold Visuals.
2. Find the print reproduction of Angelico's "Adoration of the Magi."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is list of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
3. Does the ARC own a set of boxed slides on the topic of "Magritte?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Magritte." Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
4. Does the ARC own a slide packet called "Sculpture All Around?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Sculpture All Around." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
5. How can one find the issue of Art in America that contains an article on "Le Brun?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
6. What artists have worked in line engraving?
   Procedure: Look up "line engraving" in the Oxford Dictionary of Art to locate names of artists.
7. Does the ARC own a set of boxed prints called "Impressionism?"
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Prints list under "Impressionism." Boxed Prints are located on the center shelves.
8. Find the book, Print Making without a Press.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.

Final Question:

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Task List #17

1. Does the ARC own an educational package called "Modigliani?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Modigliani." Educational Packages are shelved beneath the Reinhold Visuals.
2. Find the print reproduction of El Greco's "View of Toledo".
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is a list of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
3. Does the ARC own a set of boxed slides on the topic of "Oldenburg?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Oldenburg." Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
4. Does the ARC own a slide packet called "Sculpture All Around: CMA Resource Packet?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Sculpture All Around ..." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
5. How can one find the issue of Art in America that contains an article on "Bob Thompson?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
6. What artists were considered to be of the Mosan School?
   Procedure: Look up "Mosan School" in the Oxford Dictionary of Art to locate names of artists.
7. Does the ARC own a set of boxed prints called "Weaving?"
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Prints list under "weaving." Boxed Prints are located on the center shelves.
8. Find the book, Art from Recycled Materials.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.

Final Question:

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Task List #18

1. Find the print reproduction of Cezanne's "Mount Sainte-Victoire."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is a list of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
2. Does the ARC own a set of boxed slides on the topic of "Perspective?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "perspective." Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
3. Does the ARC own a slide packet called "Collectors: Paul and Ruth Tishman?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Collectors: Paul ..." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
4. How can one find the issue of Art in America that contains an article on "Cynthia Carlson?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
5. What artists were in the "Pre-Raphaelite Brotherhood?"
   Procedure: Look up "Pre-Raphaelite Brotherhood" in the Oxford Dictionary of Art to locate names of artists.
6. Does the ARC own a set of boxed prints called "Water?"
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Prints list under "water." Boxed Prints are located on the center shelves.
7. Find the book, Form, Space, and Vision.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.
8. Does the ARC own an education package called "Velazquez?" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Velazquez." Educational Packages are shelved beneath the Reinhold Visuals.

Final Question:

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Task List #19

1. Find the print reproduction of Bingham's "Fur Traders Descending the Mississippi."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is a list of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
2. Does the ARC own a set of boxed slides on the topic of "Photograms?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Photograms." Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
3. Does the ARC own a slide packet called "Art Now: Contemporary Collage?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Art Now: Contemporary Collage." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
4. How can one find the issue of Art in America that contains an article on "Robert Ryman?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
5. What artists were considered to be of the Precisionist movement?
   Procedure: Look up "Precisionism" in the Oxford Dictionary of Art to locatenames of artists.
6. Does the ARC own a set of boxed prints called "Pastel Drawing?"
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Prints list under "Pastel Drawing." Boxed Prints are located on the center shelves.
7. Find the book, Fun with Clay.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.
8. Does the ARC own an education package called "Rubens" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Rubens." Educational Packages are shelved beneath the Reinhold Visuals.

Final Question:

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possible on the topic, "cubism." How would you proceed? This question is for group discussion.

Task List #20

1. Find the print reproduction of Hopper's "August in the City."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is a list of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
2. Does the ARC own a set of boxed slides on the topic of "Picasso?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Picasso." Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
3. Does the ARC own a slide packet called "Art Now: A Documentation?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Art Now: A Documentation. The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
4. How can one find the issue of Art in America that contains an article on "Jennifer Bartlett?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
5. What artists were members of the group, "Section d'Or?
   Procedure: Look up "Section d'Or" in the Oxford Dictionary of Art to locate names of artists.
6. Does the ARC own a set of boxed prints called "Puppets?"
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Prints list under "Puppets"? Boxed Prints are located on the center shelves.
7. Find the book, American Art of the 20th Century.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.
8. Does the ARC own an education package called "Toulouse-Lautrec" If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Toulouse-Lautrec." Educational Packages are shelved beneath the Reinhold Visuals.

Final Question:

Suppose you wanted to find as much information and as many visuals as possible on the topic, "cubism." How would you proceed? This question is for group discussion.

Task List #21

1. Find the print reproduction of Serrano's "Fleuve."
   Procedure: In the ARC Catalog find the Print Inventory list. Artists are arranged alphabetically by last name; to the side of each artist's name is a list of the print reproductions that are owned by the ARC and the drawer (or drawers) in which they can be found. The prints are alphabetically arranged in the drawers by the artist's last name.
2. Does the ARC own a set of boxed slides on the topic of " Portraits?" If so, find it.
   Procedure: Look in the ARC Catalog's Boxed Slide list under "Portraits." Boxed Slides are filed alphabetically in the slide drawers on the south wall of the ARC.
3. Does the ARC own a slide packet called "Art Now: a Documentation?" If so, find it.
   Procedure: Look in the ARC Catalog's Slide Packet list under "Art Now: a Documentation." The packets are arranged in alphabetical order on the racks on the south wall of the ARC.
4. How can one find the issue of Art in America that contains an article on "Mies van der Rohe?"
   Procedure: Have the library aide perform a "find" search on the computer. The articles of Art in America are indexed there, as are most of the other periodicals that are owned by the ARC. The computer search will locate the date of the issue that contains the article your need. Periodicals are located on the first row of shelves as you enter the ARC.
5. What artists have worked in "soft art?"
   Procedure: Look up "Soft Art" in the Oxford Dictionary of Art to locate names of artists.
6. Does the ARC own a set of boxed prints called "Murals?"
   Procedure: Look in the ARC Catalog's alphabetically arranged Boxed Prints list under "murals." Boxed Prints are located on the center shelves.
7. Find the book, Art of Europe.
   Procedure: Look up the title in the author/title drawer of the card catalog. Copy down the call number (the number at the upper left-hand corner of the card), and locate the book on the shelf. Remember that the Dewey system is a **decimal** system. For example, 3.45 would come before 3.5.
8. Does the ARC own an education package called "Roualt." If so, find it.
   Procedure: Look in the ARC Catalog's alphabetically arranged Educational Package list under "Roualt." Educational Packages are shelved beneath the Reinhold Visuals.

Final Question:

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